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# THE AMERICAN NEPTUNE

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**T**HE public commemoration of the one hundred and fiftieth anniversary of the launching of the United States frigate *Constitution* on 21 October 1797, which has included the issuance of a three cent postage stamp, is fitting and appropriate, but *Constitution* is not the only frigate that has rounded out a century and a half of service. An Act of Congress of 27 March 1794 authorized the construction of six frigates—three 44s, *United States*, *Constitution* and *President*, built respectively at Philadelphia, Boston, and New York, and three 36s, *Constellation*, *Congress* and *Chesapeake*, built at Baltimore, Portsmouth and Norfolk. Three of these vessels were launched in 1797: *United States* on 10 May, *Constellation* on 7 September and *Constitution* on 21 October. *Congress* and *Chesapeake* were not launched until 1799, and *President* only in 1800.

Of the six frigates, two have survived. Though *Constellation* has been domiciled at Newport, Rhode Island, for a number of years, she is at present at the Charlestown Navy Yard, lying opposite *Constitution*, and suffering by comparison, for she is without her masts and spars and very obviously, even to the casual visitor, in need of a complete restoration. It is to be hoped that Congress will provide funds, or authorize the

raising of money by private subscription, for this purpose before this venerable vessel disappears, as the yacht *America* did during the war.

Although *Constellation* now carries no figure-head, she was adorned when launched with 'an elegant female figure' of intricate allegorical significance, carved by William Rush. Though this has long since disappeared, Mr. Eugene S. Ferguson has unearthed from the columns of the *Federal Gazette* and *Baltimore Daily Advertiser* of 1797 a detailed description and an anonymous criticism of Rush's work, which are here reprinted in commemoration of *Constellation*'s one hundred and fiftieth anniversary.

In the April 1947 issue the Editors made a statement concerning binding problems. They now regret to inform subscribers that, because of shortage of help and other abnormal conditions of the present day, Mr. Marchi will be unable to continue to bind volumes of *THE AMERICAN NEPTUNE* in standard blue buckram, as he has in past years. The volumes which he now has on hand at the bindery will be completed as soon as he is able to do so, but further orders cannot be accepted.



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## *The Figure-head of the United States Frigate Constellation*

BY EUGENE S. FERGUSON

NOT much has been definitely known about the figure-head and other carved work on the oldest ship in the United States Navy, the frigate *Constellation*. Until now William Rush, the ship carver who planned and executed the work, has been our only authority. His description, quoted below, was poured out more than two years before the ship was launched, and before the carvings were even started. *Constellation* had only just become the name of the frigate then building in Baltimore.

Now it is possible for the same William Rush, aided greatly by an anonymous critic, to tell us how his finished work appeared.

When Joshua Humphreys, Naval Constructor, started to get out the molds for the new frigates in the fall of 1794—a few months after Congress had authorized their building—he needed a more convenient method of designating the ships than the cumbersome official ‘a Frigate, to carry thirty-six guns, at Baltimore.’ The ships’ names had not been considered in the first arrangements for the Navy, so he assigned them letters. Starting in the south, he called the 44-gun frigate to be built in Norfolk *A*; the 44’s in Philadelphia, New York, and Boston were *B*, *C*, and *D*. Starting in the south again, the 36 in Baltimore became *E*, and finally the 36 in Portsmouth was *F*.<sup>1</sup>

The new Secretary of War, Timothy Pickering, got around to arranging for the carvings in February 1795. He had right in Philadelphia the man best qualified by experience and reputation to take the details out of his hands. William Rush, age thirty-nine, famed and celebrated, already had sent samples of his work, mounted beneath the bowsprits of American East Indiamen, half way round the world.<sup>2</sup> In order for Rush to prepare his plans, he would need something more descriptive than *A*, *B*, and *C*.

<sup>1</sup> Joshua Humphreys Papers, Historical Society of Pennsylvania, *Letter book*, I (1793-1797).

<sup>2</sup> *Dictionary of American Biography* (New York: Scribners, 1936).

Pickering asked for suggestions. Humphreys sent him a list of forty-two names, ranging all the way from *Thunderer* and *Terrible* down to *Prudent* and *Virtuous*.<sup>3</sup> Whoever else sent or gave him their ideas, Pickering himself might well take credit for naming the frigates; George Washington merely confirmed his first choices. On 14 March 1795 Pickering, as Secretary of War, sent to President Washington the results of his labors. The carved work for the ships should be in keeping with the names, he said; the work would take a long time to accomplish, since there was only the one carver in the middle states competent to handle the carvings for the ships at Philadelphia, Baltimore, and New York. Pickering sent to the President a list of names: 'United States, Constitution, President, Congress, Constellation, Defender, Fortitude, Perseverance, Protector, Liberty.'<sup>4</sup> Frigate *E* became *Constellation*, and a few weeks later William Rush was called in. His letter, submitting his preliminary descriptions for the proposed work, still survives. That part which pertains to *Constellation* follows.<sup>5</sup>

The *Constellation* should be represented by an elegant female figure, characteristic of indignant Nature, at the period of the American Revolution determined on forming a New Creation, from that Chaos of Ignorance, Vice and folly, which she had long been burthened with.—She should have a flaming torch in her right hand, setting fire to the bursting world under her feet, with the emblems of Tyranny Superstition Folly, &c issuing from it, and thrown into Confusion and fermentation, her left arm resting on the altar of Liberty. The American Eagle in the act of flight, a Sphere resting on his pinions with the Constellation inserted, soaring to heaven with one more great offering of Nature—or to adorn the new political fermament, with light and Glory, to Serve as a light to the Nations that have long Wandered in political Darkness; and to Strike with Wonder and Surprize the Wise Men of the East—

The Contents are first thoughts, probably much better may offer before it becomes necessary to commence the Business.

These extravagant words have come ringing down through the years, and have survived even 'indignant Nature'; but as carver Rush points out, these are merely ideas. We need a competent observer of the finished work as it was finally installed under Rush's supervision. Fortunately, the *Federal Gazette & Baltimore Daily Advertiser* gave space to such a person, no less an authority than Rush himself. About a month before the frigate was launched, this piece appeared in that paper.<sup>6</sup>

<sup>3</sup> Joshua Humphreys Papers, Historical Society of Pennsylvania, *Letter book*, I (1793-1797), Humphreys to Secretary of War, 20 February 1795.

<sup>4</sup> J. C. Fitzpatrick, ed., *Writings of George Washington* (Washington: Government Printing Office, 1944), XXXIV, frontispiece.

<sup>5</sup> Joshua Humphreys Papers, Historical Society of Pennsylvania, William Rush to Humphreys, 30 April 1795. Published in *Pennsylvania Magazine of History and Biography*, XXXI (1907), 239, 240.

<sup>6</sup> *Federal Gazette & Baltimore Daily Advertiser*, 9 August 1797.

Gentlemen,

One of the constant readers (when in Baltimore) of your useful paper, requests that you will be so obliging as to insert therein, as early as convenient, the following explanation of the head, and other carved work of the above frigate, in order that such as may think proper to visit that super-excellent and masterly performance, may be gratified thereby. The explanation is in the words of Mr. William Rush, of Philadelphia, who designed and executed the work, agreeably to his own fancy.

*Design of the Head for the Frigate Constellation.*

Nature, represented in pleasing extacy at the period of the American Revolution, over which she presided: she is crested with Fire, her waist is encircled with the Zone or signs of the zodiac, her hair and drapery loose and flowing, her right arm and head elevated, her left arm lightly resting on a large sphere, on which the Constellation is rising, her feet on a rock, part of which is formed into a rude pyramid, allegorical of the rapid and natural Union of the states, which took place at the commencement of the Revolution, and supports the sphere aforementioned.

The Flame ascending from the top of the rock, is expressive of the Fire which gave energy to the Patriots; the Water descending from the rock is an allusion to that Temperance, peculiarly characteristic of the American revolution; the Scale and Mirror, at the foundation of the pyramid, emblematic of the Truth and Justice of the Cause; the figure of the Dove or bird of peace, resting in the cap of Liberty, expressive of Peace and Freedom, as principal objects of the Revolution; the Herculean club encircled with laurel, is emblematic of that heroic Virtue that defended and obtained the cause; the broad Rock on which the figure stands, is emblematic of that Independence which was the ultimate end of the revolution.

The Seasons represented in the trail, crowning the Muses, as a pledge of the free and uninterrupted progress in all the pleasing branches of Science that open to view in the New World.

As I have represented the Constellation, in its first appearance, in the Political Hemisphere, or glorious period of the Revolution, in the head; so I have in the stern represented it in a more matured or permanent state. The centre is a large sphere, with the Constellation inserted, resting on a massy pedestal of an artificial form, with the fasces inlaid in the pannel, emblematic of the Union and great basis on which our government rests; three large Volumes and a Scroll, representing the three branches of Government and Constitution, is reclining on one side of the pedestal, and the Eagle and Arms of the United States on the other; next are two of the cardinal virtues, Fortitude and Justice, introduced as the supports, attributes indispensable with the happiness, honor and independence of a nation. Next to the figure of Fortitude on the starboard side, is the figure and emblem of Order, joined to the emblems of Industry and Agriculture, supported by Ceres, the goddess of agriculture, in the starboard quarter-piece.

On the larboard side, next to Justice, is the figure and emblems of Science, joined to the arts of ship-building, navigation, &c. supported by Neptune, the god of the seas, in the larboard quarter-piece.<sup>7</sup>

<sup>7</sup> Captain Thomas Truxtun, who probably sent this description to the *Gazette* in the first place, had it copied into his roll book, which is now in the Historical Society of Pennsylvania. It has been noticed there, of course, but there was no supporting evidence to show that it had actually been installed.

Presumably, the substantial folks of Baltimore visited the Navy Yard and were uniformly gratified thereby. And so we might conclude, had not one of the visitors taken up his pen, dipped it in vitriol, and written to the editors of the *Gazette*. His observations appeared in print on 6 September 1797, the day before *Constellation* was launched. We should let him tell his whole story in his own words, if only he had not been so long-winded in telling it. His words were set in solid agate type, and filled two whole columns of the *Gazette*.<sup>8</sup>

Messrs. Printers, [he wrote] Being an admirer of the fine arts, I promised myself a mental feast in contemplating the ornamental sculpture upon the Constellation frigate, so richly, and so arrogantly described, and explained, by the artist Mr. R—, of Philadelphia; but great was my disappointment on actual inspection, to find it infinitely beneath, and not at all corresponding with, Mr. R's description in your paper of the 9th August last.

As an admirer of *truth*, as well as beauty, I shall take the liberty of making a few observations on this famous design and observation, and see how it tallies with Mr. R's *modest* account of it.

Our *super-excellent* artist says, the figure at the head of the frigate 'represents Nature in a pleasing extacy, &c.' In this he certainly must be wrong: Nature is always represented as having a row of breasts, wholly uncovered, to show her office of fostering all created beings: Mr. R's figure has but two; therefore deficient in the first characteristic. Nature ought to be represented as naked as is consistent with modesty—on the contrary, this figure is cloathed to a preposterous degree of clumsiness. A figure of nature should hold a sceptre in one hand, to show her sovereign power; the other hand should be held open, somewhat extended, as in the act of blessing the animals of creation, with which she ought to be surrounded; on the contrary, our *super-excellent* artist has placed the right hand and arm as expressive of fear, which idea extends to the head and neck—the left arm seems intended to hold a sphere, but in the execution it is crippled, and appears too weak to hold the clumsy emblem, or save it from the devouring flames that our artist has put underneath it.

Our anonymous critic was just beginning to warm up to his subject. His criticism was less than generous, but he did indeed subject the sculptor's fanciful allegory to the limitations of wood, his chosen medium of expression. He proceeded to pick the work apart, splinter by splinter.

Starting with ecstatic Nature, he agreed that she was indeed 'encircled with the zone, or the signs of the zodiac, [but] how long, my *profound astronomer*, has the goose or eagle (for critics have not agreed which it is) been one of them.' He found Nature not very firmly planted: only one foot was on the rock. And of the rock itself: 'Does not this masterly artist know the form of a pyramid?—if he does, he has not imitated it in that shapeless heap of stones.'

<sup>8</sup> *Federal Gazette & Baltimore Daily Advertiser*, 6 September 1797.



It shows 'ignorance,' he said, 'to represent a constellation on a terrestrial globe.'

The mirror he called a looking glass, and added,

This absurdity, even the carpenters seem ashamed of, by their half hiding it under Mrs. Nature's petticoats;—the idea of justice seems inverted . . . he has placed one dish [of the scales] higher than the other—the beam reclined, the strings relaxed, and the whole instrument thrown carelessly by as useless or out of fashion.

The dove of peace, resting in the cap of Liberty '(or as some have facetiously called it, a duck in a bag),' he objected to on the grounds that 'the dove is trampling upon this emblem of liberty.'

He thought the Herculean club had no place in the group, 'to say nothing of the aukward, unmeaning and unsupported manner in which it is stuck against her thigh.'

Before leaving the head, he recapitulated by describing it as

a monument to the *great* artist's ignorance in every essential to sculpture, as to design, execution, proportion, or osteology; for the head is too small for the face . . . the neck is too short and distorted, the shoulders too high and prominent . . . her thighs are one longer than the other, and both too long for the legs, which make the feet appear too long; in short, the whole mass is void of taste, judgment, truth, proportion, keeping, or any excellence. . . .

On the trailboards he found 'four shapeless children' representing the seasons; the 'child on the starboard side snuffing the candle' he supposed was Winter. He could find no Muses. Instead, there was 'a Satyr's head and a jumble of emblems, comedy, tragedy, music, astronomy, agriculture, badly executed, and seem to be copied by piecemeal from different designs, by one who knew not their meaning or application.'

This admirer of truth then made his way to the stern (stumbling, we trust, over a stray treenail in his way).

The sphere was on the transom, resting on '*what he calls a pedestal*, but . . . it may be taken for a petty mausoleum, or sarcophagus, or tomb.'

Of the fasces:

he forgot, or never knew, that the exes, indicative of strength, the result of unity, ought to have been in the middle of this, at present unmeaning bundle; unless we adopt a vulgar explanation, and call it a bunch of segars.

He had sufficient objection to Fortitude and Justice to give us a clearer picture of those figures. '—it is a grand Mistake to represent Fortitude by Minerva.' The sword of Justice had not been placed within her grasp, so

she could not wield it. She did, however, hold the balance, or scales of Justice.

There was one more specific charge. The larboard quarter-piece, old man Neptune, seemed inverted. He had been crowned 'with coral and shells, while gracing his nether parts with flags or rushes.' Anybody could see that this was an inversion; are not the shells always to be found on the bottom, and the rushes at the surface?

The tirade rattled off in other directions, and no longer helped to put all of the parts in their proper places. In summing up, however, he noted what strict honesty must find in many of the wood carvings that graced the heads of ships: 'a want of design, keeping, perspective, and a due respect to sheer and rake of the different parts.'

A more lucid description of 'such contemptible chopping' we can scarcely hope to find.



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## *Two Thousand Years Under Sea: The Story of the Diving Bell*

BY DAVID WHITTET THOMSON

LONG ago, when all the world was young and learning was the possession of the few, one man could without presumption embrace all knowledge as his province.

Such a man was Aristotle. In his attempt to carve a logical system of thought out of the virgin rock of science he preserved much that was trivial. But the earth reverberated with the sound of his maul, and he created colossi. Today we hear only the soft whirr of the lapidary's wheel as many a single scholarly facet is separately polished. Such is the author of this paper, a lapidary, and less than that—a stringer of gems. Only the thread that binds them, in the familiar phrase of Montaigne, is his own.

The first stone in the necklace, the earliest extant reference to the diving bell, is taken from Aristotle. In the pages of his *Problemata* he collected all the odds and ends, the potsherds of art and science, that piqued his imagination. In book XXXII, section V,<sup>1</sup> Aristotle describes an inverted cauldron that was forced straight down into the water to prevent the air from escaping. The naked diver, collecting pearls or sponges at the bottom of the Red Sea or the Mediterranean, was able to prolong his stay under water by returning to the cauldron for a breath of air, instead of having to dissipate his strength in trips to and from the surface.

Anyone who has dipped into that historical morass, Bourrienne's *Memoirs of Napoleon Bonaparte*, where the twisted skeletons of the facts about Napoleon's reign are embedded in falsehood like the bones of the ground sloth in the tar of La Brea, will remember one episode in which the protagonists stand on firm ground, alive and breathing:

'Ah! Bourrienne,' exclaimed Napoleon in one of his jolly, avuncular moods, 'you also will be famous!'

'How, General?'

'Are you not my secretary?'

'Who,' Bourrienne asked with wry humor, 'was Alexander's?'

<sup>1</sup> W. S. Hett, tr., *Aristotle Problems* (Cambridge: Harvard University Press, 1936-1937), II, 205.

Alexander's secretary, if you have forgotten, was Callisthenes, whose works, like the tragedies of Thespis, have long since perished. His name still endures, however, attached to a fabulous romance that has come down to us in a polyglot tribe of manuscripts. *Pseudo-Callisthenes*, the *Anthony Adverse* of classical literature, affirms the eternal popularity of the historical novel. It was read with delectation in Persia, Syria, Armenia, Arabia, elsewhere in the Near East, and in Abyssinia. If the excerpt that I now present does not send the reader—like his Saracen and Ethiopian predecessors—into transports of delight, I hope that it will at least amuse him.

In this apocryphal story of Alexander and the diving bell, for which I am indebted to Sir Ernest Budge's translation of the Greek and the Ethiopic manuscripts, Alexander emerges as a Christian hero—yet he is referred to as the 'Two-horned': a literal translation of the Egyptian phrase *Sept Âbui*, 'provided with two horns.' That constituted one of the titles of the Egyptian god Amen-Ra, from whom the great Macedonian, an astute politician who keenly understood the devious Egyptian mind, shrewdly claimed descent when he thrust his armies into the fertile valley of the Nile.

Alexander, says *Pseudo-Callisthenes*,<sup>2</sup>

made an iron cage and placed in it a thick glass vessel, in the bottom of which was a hole large enough for the hand to go through. This opening could be closed and opened from the inside. When the cage was submerged the occupant could remove the covering of the hole, and put his hand out and draw into the cage whatever he wished off the sea bottom. A chain 100 cubits [25 fathoms] in length was attached to the cage, and by this his servants lowered it and drew it up.

Then the Two-horned went into . . . [the] cage of glass . . . and it had in it an entrance which could be closed and made fast with chains and rings. . . . And he spake unto his friends, saying, 'Let this be understood by me and by you. If I return unto you before the end of one hundred nights well and good, but if I do not, then go your road without me.'

At the end of seventy nights, the story continues, the Angel of the Sea, at the direct command of God Almighty, appeared before Alexander and said, 'Dost thou wish me to show thee some of the wonderful things which are in the sea?' And the Two-horned said, 'Yea, my Lord and messenger of God.'

The Angel forthwith summoned the monsters of the deep to pass in review before Alexander in his glass diving bell, and though one of the

<sup>2</sup> Sir Ernest A. Wallis Budge, ed. and tr., *The Alexander Book in Ethiopia* (London, 1933), pp. 169-172.

creatures rushed by with the speed of lightning, it was not until after three days and three nights that Alexander saw its tail.

Roger Bacon,<sup>3</sup> in speaking of Alexander's diving bell, adds that such devices had been made not only in antiquity, but in his own time [c. 1250 A.D.]. Thereafter the diving bell drops from the pages of history until 1531, when Guglielmo Lorena constructed a small bell, really no more than a primitive form of diving helmet, which he used in an attempt to salvage the scuttled pleasure barges of the Emperor Caligula in Lake Nemi. His tiny wooden bell, similar in appearance to a wine cask, had a plate glass window in front. Its weight was carried partly by the suspensory cable, and partly by a harness worn by the diver. Thus Lorena was able to walk about on the bottom with his hands and forearms out of the bell. Francesco de' Marchi, who described the device in his *Architettura Militare*,<sup>4</sup> book II, chapter 83, refused to give away the inventor's secret method of supplying the bell with a constant flow of fresh air. The exercise of a little imagination leads us to suppose that a powerful bellows and a flexible leather hose would have been a satisfactory solution to that problem. The barges were, after all, only a few feet below the surface and were salvaged more than a decade ago by a unique method: the lake was pumped partly dry.

We do not hear of the diving bell again until Johannes Taisnier<sup>5</sup> observes that if it should be propounded to the *vulgus mobile*,

that anye man myght in the myddest of the waters and fluddes, descende to the bottome of the riuer of Rene [Rhine] his apparel remaynyng drye, & no part of his body wette, & also to bryng with hym burnyng fire from the bottome of the water, it should seeme to them a laughing stocke, a mockerie and impossible. Whiche neuertheless in the yeere 1538. in Toletto a citie of Spayne, in the most swyft riuer Tagus . . . I, with twelve thousand other persons, saw in the presence of Charles the Emperour fyfth of that name. . . .

Taisnier, or to give him the Latinized name with which he signed his books, Ioannes Taisnieri Hannoni, had been professor of mathematics at Rome, Ferrara and other Italian universities. It 1538, when he saw that marvelous modern invention, the diving bell, Taisnier was a member of the entourage of the Holy Roman Emperor, Charles V. The sci-

<sup>3</sup> Tenny L. Davis, tr., *Roger Bacon's Letter concerning the marvelous power of art and of the nature and concerning the nullity of magic* (Easton, Pa., 1923), p. 27. See also T. M., tr., *Friar Bacon and his discovery of the miracles of art, nature, and magick* (London, 1659).

<sup>4</sup> Francesco de' Marchi, *Architettura militare* (Brescia, 1599), p. 43. See G. L. Pesce, *La navigation sous marine* (Paris, 1906), p. 24; Sir Robert H. Davis, *Deep Diving and Submarine Operations* (London, 1935), p. 466.

<sup>5</sup> *Opusculum de motu celerrimo* (Cologne, 1552), translated by Richard Eden as *A very necessary and profitable book concerning navigation* (London, c.1579).

ence of his time was still tagged in the minds of 'the ignorant vulgar' with the label of witchcraft and magic. Taisnier continues,

Leste the reader shoulde seeme to refute our sayings, whyle he thinketh those thynges whiche he esteemeth for miracles, to exceede the limittes of nature, I wyll shewe manifestly by one Demonstration, howe a man may descende into the bottome of anye water or ryuer, his body remaynyng drye. . . . Nowe therefore I come to the experience aforesayde, shewed at Toletto by two Greekes: who, takyng a chauldron of great capacitie, and the mouth turned downwarde, and so hanging it in the ayre by ropes, they fasten certayne postes and boordes on shelues in the myddest of the chauldron where they place themselues with the fyre. Thē to make it hang stedfastly and equally, they compasse the circumference, brymme, or border thereof with leaden plommettes on euery syde equally, and made of equal weyght, least any part of the circumference of the mouth of the chauldron when it is equally and softly let downe into the water, shoulde sooner touche the water than the whole circumference. . . . Yf by due proportion the chauldron thus prepared, be fayre and softly let downe into the water, the ayre enclosed in the chauldron (by resistance of the water) shall violently make hym selfe place, not admittynge the water to enter. So the men there inclosed, shall so long remayne drye in the myddest of the water, untyle successe of tyme doo by respiration debilitate and consume the inclosed ayre, turnyng it into grosse humiditie ingrossed by the coldenesse and moystnesse of the water: but yf in due tyme the chauldron be softly and equally drawn out of the water, the men shall remaine drye, and the fyre not extinct. . . .

To assist in the total conversion of the skeptical, Taisnier explains how a tumbler may be inverted over a candle mounted on a chip of wood. The glass and the flame may be completely submerged, yet 'shall the candle remayne alive.'

'These be naturall and Mathematicall Demonstrations,' says Taisnier, shaking an admonitory finger at his audience. 'Let not therefore the ignoraunt condemne our wrytynges, before they knowe what maye be doone by experience. It is nowe then no more a miracle, when it is known to be naturall: And thus it is in all other Sciences and experimentes, which the common people thynke to be impossible.'

The next reference to the diving bell in sixteenth-century literature is to be found in William Bourne's *Inventions or Devises* (London, 1578). Bourne relates (p. 18) that

the *Venetians* and *Italians* have (when that they doo dive under the water) a place of refuge to take ayre or breath in, by some great vessell of mettall of sufficient bignesse, and of weight, and let it down unto the bottome, with the bottome of the vessell directly upwardes, so standing uppon three or foure feete uppon the ground in the bottome of the Sea, and being letten precisely downe with the bottome upwardes, it is full of ayre, and then when that they cannot holde their breath no longer, then they doo repayre unto the saide vessell, the feete thereof being so high,



that they may goe easilie under it, and there under the vessell they doo breath themselves in the ayre in the bottome of the sea.

He concludes that the diving bell will be of very little value in the British Isles because the water is too cold and murky. The author also tells how to make a ship's log which bears a certain resemblance to the patent logs of today, a submarine, a diving helmet, a pontoon bridge, and other ingenious 'devises,' including a fugitive ancestor of the telescope.

The contrast between Taisnier, writing in the domains and under the rule of the Emperor Charles V, and Bourne, writing in Elizabethan England, is striking. Taisnier takes great pains to prove that the diving bell is neither miraculous nor magical, and condemns 'the common people' for thinking so. William Bourne, who was a ship's gunner under Admiral Sir William Wynter, and not a scholar or savant, is not at all concerned about witchcraft. He simply mentions the bell as something that might be useful in marine salvage.

Fausto Veranzio's *Machinae Novae*,<sup>6</sup> published at Venice in 1595, is quite similar to Bourne's *Inventions or Devises*. Veranzio [or Wranczy] who was Bishop of Czanad in Hungary, filled his book with plans for suspension bridges, a parachute and, among other things, a bell that seems to have been almost identical with that described by Taisnier. Two years later Buonaiuto Lorini<sup>7</sup> published in his *Delle Fortificatione* (Venice, 1597), a woodcut of a large, iron-bound, rectangular bell equipped with glass ports for illumination and a staging for the divers to stand on. Lorini says that this machine (which he does not claim to have invented) will be

not a little appreciated for the needs that may occur either in the recovery of artillery from the sea, as well as for whatsoever other things that might be aboard ship, or other vessels submerged, and also for fastening these vessels with hempen ropes to raise them up, and otherwise for convenience and usefulness in coral fishing.

Francis Bacon, whose *Novum Organum* illuminated almost every aspect of the knowledge of his time, says<sup>8</sup> that if men must descend to the bottom of the sea,

there is good use in the vessel which has sometime been employed for working under water on sunk ships, whereby divers are enabled to remain a long time below, and take breath from time to time. This machine was a hollow bell made of metal, which being let down parallel to the surface of the water, carried with it to the bottom all the air it contained. It stood on three feet (like a tripod) the height of

<sup>6</sup> See Davis, op. cit., p. 467.

<sup>7</sup> See Pesce, op. cit., p. 27; Davis, op. cit., p. 467; William Beebe, *Half Mile Down* (New York, 1934), p. 45.

<sup>8</sup> Spedding, Davis and Heath, ed., *The Works of Francis Bacon* (Boston, 1860-1864), VIII, 330-331.

which was somewhat less than that of a man, so that the diver, when his breath failed, could put his head into the hollow of the bell, take breath and then go on with his work....

A bell quite similar to this, except that it lacks the tripod arrangement, was mentioned in 1679 by Joseph Borelli in *De Motu Animalium*.<sup>9</sup> In both instances we have Aristotle's diving bell, still in use and practically unchanged—even after two thousand years.

Borelli also discusses a diving dress as elaborate as it was impracticable, and a submarine<sup>10</sup> as simple as it was useless.

The idea of exploring the depths of the sea appears to have fascinated Bacon. He returns, indirectly, to the subject in *A Letter to Sir Henry Savill Touching on Helps for the Intellectual Powers*.<sup>11</sup> The diving bell is also mentioned in *Historia Densi et Rari*.<sup>12</sup> And in his unfinished novel, *Nova Atlantis*,<sup>13</sup> Bacon speaks of: '... Ships and Boats for Going under Water, and Brooking of Seas. . . .' This reference to the submarine is not quite so prophetic as it sounds. In 1620 Cornelius Drebbel, the Dutch alchemist, had already demonstrated a crude diving boat in the Thames.

In 1616 Franz Kessler invented a diving bell similar to Lorena's, but larger. It was made of leather stretched over a wooden framework and extended down to the wearer's ankles. Around the upper part of the bell was a decorative row of tiny glass ports. Projecting below its lip like a clapper was a 25-pound weight—which, of course, would have been totally inadequate as ballast. It was intended that the diver strap himself into a sort of harness, pick up this *lorica aquatica*, or aquatic corselet, and, like a hermit crab in a snail shell, simply stroll into the water. The bell was to have been raised and lowered by paying out or hauling in a cord attached to the ballast weight. 'Thanks to this apparatus,' says Gaspar Schott, who described it in his *Technica curiosa sive mirabilis*,<sup>14</sup> 'one can walk at the bottom of the water, see, read, write, carry letters and do other things of this kind—*Poterit hac ratione per fundum ambulare, vivendo, legendo, scribendo, litteras infra aquam serendo, aliaque similia praestando.*'

The entire project smells of a badly ventilated seventeenth-century scholar's chamber. But Schott was kind enough to warn prospective divers that it was 'necessary to use great care to sink the bell vertically so as to

<sup>9</sup> (Gaesbeeck, 1685), I, 267, 272, 279. See Pesce, op. cit., pp. 28-29; Davis, op. cit., p. 469; Beebe, op. cit., pp. 45-46.

<sup>10</sup> THE AMERICAN NEPTUNE, III (1943), pp. 346-347.

<sup>11</sup> Bacon, op. cit., XIII, 298.

<sup>12</sup> Ibid., X, 257.

<sup>13</sup> (London, 1651), p. 32.

<sup>14</sup> (Würzburg, 1687), pp. 394-396. See Davis, op. cit., pp. 466-467 and Beebe, op. cit., pp. 44-45.



avoid the abnormal introduction of water, which would bring about a catastrophe.'

A far more interesting bell was patented in 1640 by Jean Barriè, who used it to salvage the cargo of a ship wrecked near Dieppe. This Barriè is probably identical with the 'Barrieus' credited by Bishop Wilkins<sup>15</sup> with having

lately found out another art, whereby a man might easily continue under water for six howers together, and whereas ten cubicall feet of air will not serve another Diver to breath in for half an hower, he by the help of a cavity, not above one or two foot at most, will have breath enough for six howers and a lanthorn scarce above the usuall size to keep a candle burning as long as a man please. . . .

Like Lorena, Barriè probably pumped air down to his bell—or diving helmet—by means of a bellows. That method, of course, would be effective only at moderate depths. It is also possible that he may have made use of a tank of compressed air.

In 1678, 'M. Panthot, Doct. en Med. & Professeur au College de Lyon,' wrote an account in the *Journal des Scavans*<sup>16</sup> of a diving bell that had been employed, about a year previously by two Moors to salvage the treasure from a couple of sunken ships in the port of Capdaques, Spain. The wooden bell, 13 feet high and 9 in diameter, was reinforced with metal bands and ballasted with iron weights of about 60 or 80 pounds each, which were distributed around the rim. A copperplate in the *Journal des Scavans* illustrates 'la Cloche ou Machine pour aller sous l'eau,' as being suspended from a gallows frame mounted on a pair of barges, and shows the diver sitting on a cross-bar in the middle of the bell. The Moors took turns going down, and collected the specie in a bag hung round the neck. When it was full, the diver emptied it into others fastened to the walls of the bell. As soon as the air became too foul to breath, the diver pulled a line attached to a signal gong on the framework and the bell was drawn up.

For some reason, which Panthot assigned to a difference in the structure of the lungs, one of the Moors could remain below for two hours, the other for only half as long. The Doctor also recorded that the diver could hear indistinctly the voices of those on the surface, but not vice versa; and that 'on one occasion the hardier of the two Moors took a hunting horn down with him and blew it, whereby he almost deafened himself and turned so giddy he almost fell out of the bell.'

<sup>15</sup> John Wilkins, *Mathematicall Magick* (London, 1648), p. 186. See also Pesce, op. cit., pp. 25-26, and Beebe, op. cit., pp. 49-57.

<sup>16</sup> (Amsterdam) 4 April 1678, pp. 145-146. See Pesce, op. cit., pp. 27-28 and Davis, op. cit., pp. 468-469.

The diver was given a share of each load of treasure recovered—as many coins as he could hold in his mouth and each hand! This haphazard method is in sharp contrast to the exact procedure of the Rhodian Sea Law which was observed for centuries under the Grecian and Roman Empires:

If gold or silver or anything else is raised from the sea from a depth of eight fathoms, let the salvor receive one third. If it is raised from a depth of fifteen fathoms, let the salvor receive one half by reason of the danger of the sea. . . .<sup>17</sup>

In a discourse concerning 'the odd Phaenomena observable in the Shell-Fish called the *Nautilus*,' delivered at a meeting of the Royal Society on 23 December 1696, Dr. Robert Hooke observes that the

Sub-marine Regions are as well stock'd with Variety of Animals and Vegetables, as the Surface of the Earth . . . only we are less knowing of them, because they are out of our Element, and we want *Nuntii* or Messengers, to send thither to bring us back Information. . . . I have heretofore produced some such *Nuntii*, for this or that particular Design, but when there may be an Opportunity of sending them, I shall be able to produce divers others, for other Purposes, if God spare my Life so long as to see the Seas again free from Rovers, and that the Study of Arts does succeed the Study of Arms. It is now above thirty Years since I try'd many Experiments, for this very End, to know under how great a Pressure a terrestrial or aerial Animal could live, and consequently a Man; and I shew'd a Way also to supply him with fresh Air from above, to whatever Depth he should be able to descend, without prejudicing his Health or Life: I shew'd also how to accomodate him for seeing with Spectacles, and acting freely in the Water as he could do in the Air, by Means of other Accountments, whenever he was able to endure the Pressure. And I have many other Experiments, which would be not only instructive, but useful for these and other Designs, but I want an Apparatus and Assistance to perform them.<sup>18</sup>

We shall probably never know exactly what Hooke's apparatus was, for, as William Derham, the editor of Hooke's *Philosophical Experiments*, explains, many of the Doctor's papers as well as his 'figures and modules,' were mislaid and lost after the death of Hooke's literary executor, the learned Mr. Edmund Waller. We may surmise, however, that Hooke was speaking of an air pump and some sort of diving dress.

The British Patent Office records<sup>19</sup> shed a few feeble gleams of light on the progress of the diving bell in seventeenth-century England. On 16 March 1671, Edmund Custis was granted His Majesty's Letters Patent on a device for the 'Discovery of wrecks and vessels sunk; and also for taking out of them goods, treasures, merchandise, guns and ships' furniture.'

<sup>17</sup> Walter Ashburner, ed., *The Rhodian Sea Law* (Oxford, 1909), p. 119.

<sup>18</sup> Robert Hooke, *Philosophical Experiments* (London, 1726), pp. 313-314.

<sup>19</sup> *Subject Index of Patents of Invention from 14 James I to 16 Victoriae* (London, 1854).

Four years later Goodwin Wharton, William Perkins and James Innes, Jr., came along with a 'New way of diving and living several hours under the water, by curing the air conveyed down for sustenance so as to make it fit for respiring whilst beneath the water.' On 26 August 1687 Henry Ayscoghe outdid his predecessors by registering 'An ablution enabling persons to walk and remain under water three hours with no covering over their heads.' It is lamentable that Mr. Ayscoghe's formula has not been preserved. Dr. Edmund Halley's diving bell, which will be described in its proper place, was patented jointly by Halley, Sir Stephen Evance, Francis Tyssen and John Holland, on 7 October 1691. In the same year, Samuel Atkinson, Samuel Weals and Nicholas Nicholls produced an 'Engine made of timber, with glass windows, door, leather sleeves and air pipes affixed, to enable a man to walk under water for many hours.' This, however is obviously an armored diving dress, rather than a diving bell. On 17 March 1693 John Stapleton received patent No. 318 on a formidable and truly versatile combination of inventions: an 'Engine contrived so as to admit of a person enclosed in it to walk under water; method of forcing air into any depth of water to supply said person, and to cause a lamp to burn while under water; also an engine which will float on the water in the most violent storms, but if inverted and supplied with air, will enable a person enclosed therein to sink to the bottom and ascend without injury; purifying the air to make the same again serviceable for respiration, so that a man in either of these said engines may remain a long time under water without air other than what the engines contain.' The last of these seventeenth-century patents, No. 333, was granted on 10 April 1694, to Samuel Winball for what is described simply as a 'Machine of metal and other materials, whereby persons may descend to twenty fathoms more in the sea and remain twenty four hours.'

In all of the eighteenth century only one diving machine, the armored diving dress invented by Jacob Rowe in 1720, was patented. Rowe's device is almost identical with that employed during the same period by John Lethbridge, which will be discussed later. Many different types of diving gear were used from the time of Aristotle to the beginning of the industrial era, but since the story of the diving helmet, however interesting, is beyond the scope of this paper, the device has been mentioned only in passing.

George Sinclair, Professor of Philosophy at the University of Glasgow, devoted some space in his works on mechanical science<sup>19a</sup> to the unsuccessful

<sup>19a</sup> *Ars Nova et Magna Gravitatis et Levitatis* (Rotterdam, 1669), p. 220; and *The Hydrostaticks*, (Edinburgh, 1672). See Pesce, op. cit., p. 26; Davis, op. cit., p. 468.

ful attempts to recover the treasure from the wreck of a Spanish galleon off the Isle of Mull in 1665. The metal bell used in these operations was extremely small, not much larger than Lorena's. It was suspended by chain slings. Hanging below it, also by chains, was a platform on which the diver stood, with his head and torso within the bell. The staging weighed about 130 pounds, and the entire apparatus no more than 390.

Sinclair does not bother to mention the name of the inventor. The seventeenth was an aristocratic century, intellectually as well as socially, and artisans were of little account. The professor says merely that he had examined the machine and talked with the diver. The historical detective work of Sir Robert Davis indicates that the inventor, one of the first men to use a diving bell in Great Britain, may have been 'one Archibald Millar, of Greenock, who, as appears by a deposition now in the Bodleian Library [Rawlinson MSS., A 189, f. 423] undoubtedly was diving at the wreck at some date between 1680 and 1683, but there is no evidence that he was there in 1665.'

Many indeed have been the subsequent endeavors to snatch the 'great Sum of Gold and Money' from the rotting bosom of His Most Catholic Majesty's Ship *San Juan Batista* at the bottom of Tobermory Bay—and with no more satisfactory result than that achieved in 1668 by the Duke of Argyle, whose efforts were rewarded with: 'some pieces of Gold, and Money, and a Golden Chain . . . some fine brass Cannon, some pieces of Eight, Teeth, Beads, and Pins. . . .'<sup>19b</sup>

It is reported that one John White, Vicar of Cherton, 'published a collection of inventions in 1677 which includes a diving bell, typical of many such paper projects which saw the light in the last quarter of the seventeenth century.'

The first edition of John White's *Rich Cabinet of Modern Curiosities* was published by G. Conyers at the sign of the Golden Ring in Little Britain, London, circa 1651. It was reprinted many times. The earlier editions contain no reference to the diving bell, though they are filled with recipes for: 'A sure way to catch a Pickpocket. . . . To Catch Fish in a dark night with a Candle under Water. . . . How to take the Altitude by a Bole of Water. . . . To prevent Fleas from a Dog. . . . How to make dainty sport with a Cat.'<sup>20</sup> . . .

After White's death in 1671 his best-selling book, a duodecimo volume of seventy-two pages, was revised and expanded by the publishers. Among

<sup>19b</sup> Martin Martin, *A Description of the Western Isles of Scotland* (London, 1703), p. 253.

<sup>20</sup> 'Some,' says the Rev. Mr. White, 'have shod a Cat round, with putting melted Pitch into four Walnut-shells and placing her feet therein, and she will make pretty sport.'



the additions was a chapter, lifted bodily from Taisnier's *Opusculum de motu celerrimo*, on the Greek jongleurs' show at Toledo in 1638. And so 'John White's' diving bell turns out to be not empty speculation, but solid plagiarism.

In 1689 Dr. Denis Papin<sup>21</sup> suggested, though he never carried his idea into practice, that diving bells might be supplied with fresh air by force pumps or bellows. In this he was merely following in the footsteps of Lorena, Barriè, and Hooke. It is doubtful that the air compressors of the period would be equal to the task of pumping air more than a few feet below the surface. Within a year, however, the difficulty was to be solved in a slightly different way by Dr. Edmund Halley, Astronomer Royal, Secretary of the Royal Society, and discoverer of the periodic nature of the comet that now bears his name.

A transitional form of diving bell, midway between the common bell and the diver's suit, is described at length in a letter from the inventor, John Lethbridge, in the *Gentleman's Magazine* for September 1749.<sup>22</sup>

Necessity is the parent of invention, and being, in the year 1715, quite reduc'd, and having a large family, my thoughts turned upon some extraordinary method, to retrieve my misfortunes; and was prepossessed, that it might be practicable to contrive a machine to recover wrecks lost in the sea; and the first step, I took towards it, was going into a hogshead, upon land, bung'd up tight, where I stay'd half an hour, without communication of air; then I made a trench, near a well, at the bottom of my orchard . . . in order to convey a sufficient quantity of water to cover the hogshead; and then try'd how long I could live under water, without air-pipes, or communication of air; and I found I could stay longer under water than upon land. This experiment being try'd, I then began to think of making my engine, which was soon made, by a cooper, in *Stanhope-street, London*, of which you have the following description. It is made of wainscot, perfectly round, about six feet in length, about two foot and a half diameter at the head, and about eighteen inches diameter at the foot, and contains about 30 gallons; it is hoop'd with iron hoops without and within, to guard against pressure; there are two holes for the arms, and a glass about four inches in diameter, and an inch and a quarter thick, to look thro' which is fixed in the bottom part, so as to be in a direct line with the eye; two air-holes, upon the upper part, into one of which air is conveyed, by a pair of bellows, both of which are stopt with plugs, immediately before going down to the bottom. At the foot part there's a hole to let out water sometimes; there's a large rope, fix'd to the back, or upper part, by which it's let down; and there's a little line, called the signal line, by which the people above are directed what to do, and under is fix'd a piece of timber, as a guard for the glass, I go in with my feet foremost, and when my arms are got thro' the holes, then the head is put on, which is fastened with scrues. It re-

<sup>21</sup> *Acta Eruditorum* (Leipzig), September 1689, p. 485; October 1690, p. 531; *Recueil de diverses pieces touchant quelques nouvelles machines* (Cassell, 1695), p. 125. See Pesce, op. cit., pp. 30-31; Davis, op. cit., pp. 470.

<sup>22</sup> Pp. 411-412.

quires 500 weight to sink it, and take but 15 pound weight from it, and it will buoy upon the surface of the water. I lie straight upon my breast, all the time I am in the engine, which hath many times been more than 6 hours, being, frequently, refreshed upon the surface, by a pair of bellows. I can move about 12 foot square, at the bottom, where I have stayed, many times, 34 minutes. I have been ten fathoms deep many a hundred times, and have been 12 fathom, but with great difficulty. . . .

'Great difficulty,' is something of an understatement. In a device such as that used by Lethbridge, the body of the diver is under atmospheric pressure, while his arms must endure the crushing weight of the sea. When a diver named Irwin, in a similar dress, was foolhardy enough to descend, *c.* 1726-1729, to thirteen fathoms to snatch a glittering handful of pieces of eight from the floor of the sea, 'the Circulation of his Blood was so far stopp'd, and he suffer'd so much, that he was forced to keep his Bed six Weeks.'<sup>23</sup>

'I would not be misunderstood in saying,' Lethbridge explains, 'that I am the first inventor of a diving engine, without communication of air; for I mean such as to work about in such a small quantity of confined air; for otherwise I should assume the invention of a diving bell engine (to assist naked divers) invented by Sir *Wm Phips*, in the reign of King *Charles II*, which was improved by Dr. *Halley*, who frequently conversed with me, on account of my invention, and said, he never thought any man could invent a machine, to work about himself, in so small a quantity, as six ounces of confined air.'

The Lethbridge Salvage Company, if we may give it a name, seems to have been quite a profitable enterprise. The inventor appears to have dived for treasure, and other valuable sunken cargoes 'in the *West Indies*, at the isle of *May*, at *Porto Santo* (near *Madera* [*Madeira*]) and at the *Cape of Good Hope*. . . .

Sir William Phips,<sup>24</sup> whom Lethbridge so casually credits with the invention of the diving bell, did carry a bell in the ship *James and Mary* in his treasure hunting expedition to *Ambrosia Bank* in 1686-1687. But his bell seems to have been quite similar to that described by *Taisnier*, which, in the latter part of the seventeenth century, was in fairly common use in *America* as well as in *Europe*. The air in the diving bell was sufficient to permit a diver to remain below for about forty-five minutes.

When Phips found his Spanish galleon she lay six or eight fathoms down, surrounded by boiling reefs—too deep and in too treacherous a situation for the bell to be of any use. The treasure—more than £200,000,

<sup>23</sup> J. T. Desaguliers, *A Course of Experimental Philosophy* (London, 1745), II, 215.

<sup>24</sup> Alice Lounsberry, *Sir William Phips* (New York, 1941).



an immense sum in 1687—was slowly and painfully recovered by Indians who made sixty to ninety second dives from small boats.

The publication of Edmund Halley's famous essay on 'The Art of Living under Water; Or, a discourse concerning the means of furnishing Air at the bottom of the Sea in any ordinary depths,' in the *Philosophical Transactions* of the Royal Society of London,<sup>25</sup> marked the first application of the scientific mind to the problem of working under water. In his paper, which appeared in 1716, Halley attacked the question at the roots, and arrived at as perfect a solution as the technology of his time permitted.

Halley confessed that he was quite unable 'to shew what it is the *Air* loses by being taken into the *Lungs*, or what it communicates to the *Blood* by the extream ramifications of the *Aspera Arteria*. . . . He knew only that it is deprived of its '*vivifying Spirit*, and is rendered effete. . . . He mentioned that even an expert diver, like the Florida Indian he had seen at Bermuda, cannot remain below the surface for more than a couple of minutes, while an ordinary person begins to stifle in about half a minute. Some, he said, have contrived to send air down to a man in an armored diving dress by means of a bellows and flexible pipes. 'This has indeed been found sufficient for small Depths, not exceeding twelve or fifteen Foot. . . . Beyond the two fathom line, and up to six fathoms, the common diving bell was very useful, but 'the water entering into it, so as to contract the bulk of Air . . . into so small a space, as that it soon heats and becomes unfit for Respiration, for which reason it must be often drawn up to recruit it: and besides the Diver being almost covered with the Water thus entering into his Receptacle, will not be long able to endure the Cold thereof.'

In the year 1690,

being engaged in an Affair that required the Skill of continuing under Water, I found it necessary to obviate these Difficulties which attend the use of the common Diving-bell, by inventing some means to convey Air down to it, whilst below; whereby not only the Air included therein, would be refresh'd and recruited, but also the Water wholly driven out, in whatever Depth it was. This I effected by a Contrivance so easy, that it may be wondered it should not have been thought of sooner, and capable of furnishing Air at the bottom of the Sea in any quantity desired. The description of my *Apparatus*, take as follows.

The Bell I made use of was of Wood, containing about 60 Cubick Foot in its Concavity, and was of the form of a Truncate-Cone, whose Diameter at Top was three Foot, and at Bottom five. This I coated with Lead so heavy that it would sink empty, and distributed the weight so about its bottom, that it would go down in a perpendicular Situation, and no other. In the Top, I fixed a strong but clear

<sup>25</sup> XXIX (1716), 492-499; XXXI (1721), 177-180.

Glass, as a Window to let in the Light from above, and likewise a Cock to let out the hot Air that had been Breathed; and below, about a Yard under the Bell, I placed a *Stage* which hung by three Ropes, each of which was charged with about one hundred Weight to keep it steady. This Machine I suspended from the Mast of a Ship, by a *Spritt* which was sufficiently secured by *Stays* to the Mast-head, and was directed by *Braces* to carry it over-board clear of the Ship side, and to bring it within-board as occasion required.

To supply Air to this Bell when under Water, I caused a couple of Barrels, of about 36 Gallons each, to be cased with Lead, so as to sink empty; each having a Bung-hole in its lowest Part to let in the Water, as the Air in them condensed on their descent; and to let it out again when they were drawn up full from below. And to a Hole in the uppermost Part of these Barrels I fixed a Leathern Trunk or Hose, well liquored with Bees-Wax, and Oyl, and long enough to fall below the Bung-hole, being kept down by a Weight appended; so that the Air in the upper Part of the Barrels could not escape, unless the lower ends of these Hose were first lifted up.

The Air Barrels being thus prepared, I fitted them with Tackle proper to make them rise and fall alternately, after the manner of two Buckets in a Well; which was done with so much ease, that two Men, with less than half their Strength, could perform all the Labour required: and in their descent they were directed by Lines fastened to the under edge of the Bell, the which past through Rings placed on both sides of the Leathern *Hose* in each Barrel; so that sliding down by those Lines, they came readily to the Hand of a Man, who stood on the Stage on purpose to receive them, and to take up the ends of the *Hose* into the *Bell*. Through these *Hose*, as soon as their ends came above the Surface of the Water in the Barrels, all the Air that was included in the upper Parts of them was blown with great force into the Bell, whilst the water entered the Bung-holes below, and fill'd them: and as soon as the Air of the one Barrel had been thus received; upon a signal given, That was drawn up, and at the same time the Other descended: and by an alternate Succession furnished Air so quick, and in so great Plenty, that I my self have been One of Five who have been together at the Bottom, in nine or ten Fathoms Water, for above an Hour and a half at a time, without any sort of ill consequence: and I might have continued there as long as I pleased, for any thing that appeared to the contrary. Besides the whole Cavity of the Bell was kept entirely free from Water, so that I sat on a Bench, which was diametrically placed near the Bottom, wholly drest with all my Cloaths on. I only observed, that it was necessary to be let down gradually at first, as about 12 Foot at a time; and then to stop and drive out the Water that entered, by receiving three or four Barrels of fresh Air, before I descended further. But being arrived at the Depth designed I then let out as much of the hot Air that had been Breathed, as each Barrel would replenish with Cool, by means of the Cock in the Top of the Bell; through whose Aperture, though very small, the Air would rush with so much violence, as to make the Surface of the Sea boyle, and to cover it with a white Foam, notwithstanding the great weight of Water over us.

Thus I found that I could do anything that was required to be done just under us; and, that by taking off the Stage, I could, for a space as wide as the Circuit of the Bell, lay the Bottom of the Sea so far Dry, as not to be over-shoes thereon. And

by the Glass Window, so much Light was transmitted, that, when the Sea was clear, and especially when the Sun shone, I could see perfectly well to Write or Read, much more to fasten or lay hold on any thing under us, that was to be taken up. And by the return of the Air-Barrels, I often sent up Orders, written with an Iron Pen on small Plates of Lead, directing how to move us from Place to Place as occasion required. At other times, when the Water was troubled and thick, it would be as dark as Night below; but in such Case, I have been able to keep a Candle burning in the Bell as long as I pleas'd, notwithstanding the great expence of Air required to maintain Flame.

Halley observes that it is not dangerous to breath compressed air, since it 'soon insinuates itself into all the Cavities of the Body, and has no sensible effect, if the Bell be permitted to descend so slowly as to allow time for that purpose.' Unfortunately, the air penetrated the passages of the ear very slowly, so that 'on the first descent of the Bell, a Pressure begins to be felt on each Ear, which by degrees grows painful, like as if a Quill were forcibly thrust into the Hole of the Ear. . . .' This discomfort persisted

till at length the force overcoming the Obstacle . . . present Ease ensues. But the Bell descending still lower, the Pain is renewed, and again eased after the same manner . . . when the Engine is drawn up again, the condensed Air finds a much easier Passage out of those Cavities, and even without Pain. This Force on the auditory Passages might possibly be expected to be prejudicial to the Organs of Hearing, but that Experience teaches otherwise. . . .

I take this to be an Invention applicable to various Uses; such as *Fishing for Pearl*, Diving for Coral, Sponges and the like, in far greater Depths than has hitherto been thought possible. Also for the fitting and plaining of the Foundations of Moles, Bridges, &c. upon Rocky Bottoms, and for cleaning and scrubbing of Ships Bottoms when foul, in calm Weather at Sea. But as I have no experience in these matters, I leave them to those that please to try. I shall only intimate, that by an additional Contrivance, I have found it not impracticable for a Diver to go out of our Engine, to a good distance from it. . . . But of this perhaps more hereafter.

Five years later, as he had promised, Halley published a description of his diving helmet, or 'Cap of Maintenance,' as he called it. This was really nothing more than a miniature diving bell, weighing about fifty pounds, which was connected to the great bell by about forty feet of flexible pipe. The diver received 'a constant Stream of Air . . . so long as the Surface of the Water in the Cap was above the Level of that in the Bell.' The helmet was equipped with a cock for the purpose of stopping 'the return of the Air, whenever there was occasion to stoop down, or go below the Surface of the Air in the Bell. . . .' In addition to the 50-pound cap, the diver had a girdle of equal weight hung around his waist, and

on his feet were a pair of leaden clogs that brought his total ballast up to about 124 pounds. Wearing this outfit and thick woollen clothing which, 'being full of Water, would be a little warm'd by the Heat of the Body, and keep off the Chill of new cold Water coming' in, the diver could explore the sea bottom in perfect safety, if not in comfort. There was one drawback:

I at first fixt a plain Glass before the Sight, but soon found that the Vapour of the Breath would make such a Dew on the Surface of the Glass, that it hindred its Transparency: To remedy which, I found it necessary to prolong that side of the Cap that was before the Eyes, and thereby enlarged the Prospect of what was under us.

Certain minor improvements were made in Halley's bell in 1732 by 'Mr. Martin Triewald, F.R.S., Captain of Mechanics, and Military Architect to His Swedish Majesty,' who constructed his *Campana Urinatoria* of copper, and made it considerably smaller and more easily handled than Dr. Halley's—also less expensive to use, since, as Triewald explains in a letter to the Rev. Dr. John Theophilus Desaguliers,<sup>26</sup> a Fellow of the Royal Society and the author of that monumental scientific tome, *A Course of Experimental Philosophy*, in Swedish waters 'Cargoes of a far less Value than the Loadings of *Spanish Galleons* &c, are to be dived for. . .'

Forty-two years later Hammar,<sup>27</sup> another Swede, exhibited a diving bell which appears to have been a variation of Triewald's design, to the King of Sweden at Lake Wartau, near Dirnholm.

All this strongly indicates the existence in Europe of a widespread, and apparently flourishing, salvage industry dating from the early sixteenth century.

Following in the economical footsteps of Triewald and Hammar, Louis Dalmas,<sup>28</sup> of Marseilles, made some suggestions in 1764 about constructing a diving bell of leather stretched over a wooden ring—a sort of leather bubble, in fact, which was even more chimaerical than Kessler's 'Wasserharnisch.' Dalmas received the justifiably caustic attention of Sir Robert Davis in his *Deep Diving and Submarine Operations*: 'Such a bell might certainly be constructed very cheaply, but in anything but the shallowest of water it would probably have cost the inventor his life if he tried it personally.'

On the night of 3 December 1774 the ship *Peggy*, bound from London to Leith 'with a very full and valuable loading,' was wrecked on the

<sup>26</sup> *Ibid.*, XXXIX (1738), 377-383.

<sup>27</sup> *Gazette de France*, 6 May 1774, 160. See also Pesce, *op. cit.*, p. 35 and Davis, *op. cit.*, p. 472.

<sup>28</sup> See Pesce, *op. cit.*, p. 34 and Davis, *op. cit.*, p. 472.



Scares, or Fern Islands, off the Mull of Galloway. Mr. Charles Spalding,<sup>20</sup> an Edinburgh grocer who had a large interest in the cargo, salvaged most of the lighter goods, which had been washed up on the beach. He decided to dive for the rest, and immediately 'consulted every author I could find on the subject of diving, and the Diving Bell.'

Not too many books on diving were available in 1774. Spalding says that he had heard of Halley's experiments; he undoubtedly knew about Triewald's improvements, and, since the Scottish common schools and academies were far superior to those of any other European nation, Spalding probably had a good command of Latin, even though he may not have attended a University. He should, therefore, have been able to read the Latin works of Taisnier, Borelli, Schott, Sinclair, and others. It is almost certain that he looked into such well-known contemporary volumes as Desagulier's *Course of Experimental Philosophy* and Martin's *Philosophia Britannia*, both of which contain informative, illustrated chapters on the diving bell. Then, of course, there were the encyclopaedias: the *Britannica*, *Chambers'*, the *Complete Dictionary of Arts and Sciences*, which restricted themselves to the inventions of Halley and Triewald with slight references to Drebbel's submarine and Borelli's diving dress.

By June of 1775 Spalding had designed and built a very small bell with which he tried to locate, merely for the experience, a man-o'-war which lay at the bottom of Dunbar Bay. He was unsuccessful, and went searching for another sunken vessel in the river Tay, near Dundee. After finding it, he was unable to salvage any of its cargo of ironmongery. He proceeded to look for *Peggy*, but in vain. Spalding then went off to recover the cannon from a Dutch vessel that had been lost off the Scares in 1704. He relates, in what is surely one of the earliest descriptions of the sea bottom by an eyewitness, that,

At the fifth going down, each trial being in a different place, I was agreeably surprised to find a large grove of tall weeds, all of them from six to eight feet high, with large tufted tops, mostly growing in regular ranges, as far as the eye could reach; a variety of small lobsters and other shell fish swimming about in the intervals.

After many other adventures, Spalding scrapped his tiny bell—it contained only 48 gallons of air—and built his 'improved' model. Comparatively large, it was constructed of the long, heavy barrel staves used in making wine pipes, and measured 5 feet in depth, 5 in width at the bottom, and tapered to 2½ feet at the top. It was illuminated by several thick

<sup>20</sup> Royal Society of Arts, London, *Transactions*, I (1783), 220-238. S. W. Smith, *Observations on Diving and Diving Machines* (London, 1823), p. 19.

glass ports in the sides. The bell contained about 200 gallons of air and was surmounted by an external ballast chamber that held about 25 gallons. That was not the only unique feature. Suspended by a block and tackle from the centre of the bell was a 300-pound 'balance weight.' The bell was ballasted with 1600 to 2000 pounds of leaden billets which were hung round the outside of the lip. Spalding varied the amount of ballast with the weight of the divers.

Spalding's bell was supplied with air by the same method as Halley's, and was operated in this manner: the centre weight was dropped to the bottom, the ballast chamber flooded until the specific gravity of the bell was just a bit less than that of the surrounding water, and the divers themselves hauled her below the surface with the block and tackle. When the divers stood on the bottom the loss of weight was compensated for by admitting more water into the ballast tank. By turning a stop-cock, the water ballast could be blown out again.

'This machine,' Spalding says, '... can be used in the coldest weather, as the men in the bell have no occasion to be above knee deep in water, for which high-topped water-tight boots, will be a sufficient defence, and a thick flannel dress is preferable to every other.'

The remarkable thing about Spalding's bell is that the divers could hoist in the centre weight and walk the bell along the bottom, prospecting for wrecks. This is exactly what Franz Kessler had dreamed of in 1616. The same defects—insufficient ballast and a variable centre of gravity—that made Kessler's bell so utterly impracticable, made Spalding's dangerously instable. In 1776 he was awarded a bounty of 20 guineas for his improvements in the diving bell by the London Society for the Encouragement of Arts, Manufactures and Commerce. For almost two decades he pursued his career as a diver, but one fine day in 1783, while he and a companion were examining the wreck of an East Indiaman that lay in seven fathoms at the bottom of Dublin Harbor, 'owing to the inattention of the persons in attendance, the signal ropes got entangled, and these gentlemen unfortunately perished!'

John Smeaton,<sup>30</sup> a very famous English engineer, and one of the founders of that profession in the British Isles, had rather a routine assignment in the autumn of 1778: the shoring up of the foundations of Hexham Bridge, in Northumberland. The gravel bottom of the Tyne at Hexham made it difficult, if not impossible, to expose the bases of the piers by means of caissons, since the water seeped in as fast as it was pumped out.

<sup>30</sup> *Reports of the late John Smeaton, F.R.S.* (London, 1812), III, 279-283. John Smeaton, *An Historical Report on Ramsgate Harbour* (London, 1791), pp. 70-71.



Smeaton seems to have cudgeled his brains for a few weeks and then, in the middle of September, drew up complete and precise orders for the construction of a strong chest made of good red wood deal entirely free of sap, 43 inches high, 27 wide and 46 long, suspended by a block and tackle, and weighted with 16 pigs of lead. The chest was to be well jointed, put together with white lead and oil, strongly clamped with iron, and illuminated by thick glass lights in the roof. The water was not very deep, and it was necessary that the bell be completely submerged. On the exposed top of the bell there was to be mounted 'a kind of forcing air-pump, made of thin hammered copper, that will throw in a gallon at a stroke.'

On 16 September 1778 Smeaton wrote to Mr. Pickernell, who seems to have been in charge of the work at Hexham, that

Were I with you when it is put in use, I should be the first to go down in it, as there is no more danger (all your tackle being firmly fixed,) than being let down into a coal pit by a rope; and if it shall happen that all your masons are too fine fingered, I fancy a couple of colliers to take turn and turn, will find it a very comfortable job; a particular encouragement must however I expect be given.

The very early bells were hemispherical; the later ones were conical in shape. The use of that type of construction for so many centuries was not due merely to caprice, or to the blind observance of a traditional form, but to sheer necessity. As a rounded or conical bell descends, the air within is compressed into a smaller and smaller space, but since the diameter decreases towards the top, a relatively deep bubble of air remains trapped in the upper part of the bell. The air in a cubical bell would be squeezed into a thin layer against the roof, and it would be impossible for the divers to breathe. The air supply in a Halley type of bell was not extravagantly great. Halley's truncated cone combined a large working area at the bottom with a negligible amount of dead space at the top. Smeaton's pump provided so much air with so little effort that the excess could be allowed to 'boil up on the outside.' Thus, as in all lines of human endeavor, when it was no longer necessary to practice economy, efficiency and comfort could be increased.

I cannot imagine how a man could be either comfortable or efficient in a diving bell no bigger than a theatrical trunk, but from all accounts 'Smeaton's chest' was more than satisfactory.

Ten years later Smeaton was engaged in a far greater undertaking, the reconstruction of Ramsgate Harbor. It became necessary to remove a large quantity of stones that had been cast into the water at the head of the East Pier to secure it from erosion. 'As it seemed dubious,' Mr. Smea-

ton notes in a report made to the Trustees of Ramsgate Harbor in 1791, whether they could all be got up . . . by the usual method of *tongs*, from the barges; this occasioned me to turn my thoughts upon a *diving machine* I had formerly made use of with success, in doing works under water to a certain depth. . . .

Instead of the usual form of a *Bell*, or of a conical tub of wood sunk by weights (externally applied) this, for convenience, was a square *chest of cast iron*, which being 50 Cwt. was heavy enough to sink *itself*; and, being 4½ feet in height, 4½ feet in length, and 3 feet wide, afforded room sufficient for two men at a time to work under it. But it was *peculiar* to this machine, that the men therein were supplied with a constant influx of fresh air, without any attention of theirs; that necessary article being amply supplied by a *forcing Air Pump*, in a boat, upon the water's surface.

'With this machine, which enabled the workmen to stay under water any length of time at pleasure, when the wind was moderate, that the boats could attend,' the foundation was cleared, during the months of July and August, 1788, of more than 100 tons of stones, 'many of above a ton each; but the *want* of the Machine would doubtless have been the loss of the season.'

In 1808 a French inventor, M. Brizé-Fradin, described his improved diving bell in a euphoniously entitled brochure: *Chimie Pneumatique Appliquée aux Travaux Sous l'Eau*.<sup>31</sup> Sir Robert H. Davis brusquely dismisses Brizé-Fradin and his bell: 'It does not appear to have been constructed, which was as well, for it was quite impracticable.'

It remained for John Rennie,<sup>32</sup> one of the towering figures of late eighteenth- and early nineteenth-century engineering, to put the finishing touches on the diving bell. Not many years after Smeaton's death, Rennie was appointed engineer-in-chief at Ramsgate. In August 1812 the old East Pier, which had given Smeaton so much trouble, began to slough itself into the harbor.

Rennie constructed a little railway on a temporary framework erected over the pier site. Along this ran a four-wheeled platform on which a pair of rails was laid at a right angle to the main track. The diving bell was suspended from a truck mounted on the platform so that it could be moved from side to side, backwards and forwards until it was exactly over the spot where it was needed.

Rennie's cast-iron bell was 6 feet long, 4 broad, 5 deep and weighed 4200 pounds. Twelve large convex lenses were set in the top and ad-

<sup>31</sup> (Paris, 1808). See Pesce, op. cit., p. 42 and Davis, op. cit., p. 474.

<sup>32</sup> Sir John Rennie, *The Theory, Formation and Construction of British and Foreign Harbours* (London, 1854), I, 98-99. Charles Babbage, [article on diving bell], *Encyclopedia Britannica* (London, 1845), XVIII, 160-161.

mitted enough light to 'enable the diver to read the smallest print, or even to perform the neatest needle-work.' [!]

S. W. Smith, one of Rennie's superintendents, mentions that an air cock might have been fitted in the upper part of the machine to let out the foul air. 'This however would be an additional trouble, attract the attention of the workmen from their employment, and be of no real advantage in the present construction of the Bell, which is constantly receiving a supply of air' from a powerful air compressor on the surface.

Smith also tabulates the signals, made by striking the side of the bell with a hammer, which were in vogue at the time:

- 1 stroke: more air.
- 2 strokes: cancel a former signal, or cease action until another is given.
- 3 strokes: raise the bell.
- 4 strokes: lower the bell.
- 5 strokes: move the bell to the right.
- 6 strokes: move the bell to the left.
- 7 strokes: move the bell backwards.
- 8 strokes: move the bell forwards.

Rennie's use of the diving bell made it possible to dispense with clumsy, expensive coffer-dams, and for the first time to lay masonry under water. The operations, says Rennie's younger son, Sir John, proceeded with as much regularity and certainty as if executed on dry land. 'The very successful manner in which this work was completed formed an important era in submarine architecture.'

Mr. Rennie went on to supply similar apparatus for a great many ports in the United Kingdom, most of the Royal Dockyards in Great Britain and the Colonies, as well as various South American harbors, and even for pearl fishing in Ceylon. It was indeed the beginning of a new era.

Although Dr. Beebe's Bathysphere is a lineal descendant of Aristotle's inverted cauldron, it is a completely enclosed observation chamber and not, properly speaking, a diving bell. Therefore, if we disqualify the Bathysphere 'on points,' it is possible to say that since Rennie's day refinements have been made in the bell—the addition of telephones, electric light, and so forth—but no real improvements. Moreover, the diving bell—which has been largely superseded by the diving suit—loses its interest for the naval antiquary when, at the hands of John Rennie, it became a prosaic engineering device.



## My Last Voyage on the Coast of Peru

BY CAPTAIN AMBROSE H. BURROWS<sup>1</sup>

ON the 24 January, A.D. 1823, I set sail from the port of New York for Lima (Peru), on the Pacific Ocean, in the brig *Frederick Enoch*; Silas E. Burrows<sup>2</sup> of Head of Mystic, and myself, with a cargo on the owners' account consisting of Yankee notions as follows: beef, pork, lard, butter, cheese, fish, flour, bread, spirits, tobacco, cigars, boots, shoes, ready-made clothing and so forth.

On the second day of July, after a passage of 158 days, during which time we had encountered much rough weather, we arrived at Callao, the port of Lima, having lost the head of our mainmast, foretopmast, and a number of small spars, together with sails, rigging, and so forth. On my arrival at Callao, I found the port in possession of the Patriots, while Lima, the capital, was in possession of the Spanish army. For a time, all business was suspended, except that of War. All the vessels in port were crowded with inhabitants, men, women and children that had fled from Lima . . . fearing for their safety. But shortly after my arrival at Callao, General Bolivar arrived with a number of transports full of troops from Colombia, to assist in the Patriot cause; in consequence of which the Spanish army evacuated Lima. Soon after, the inhabitants who had taken refuge on board the ships returned to their homes, after remaining about two months at Callao.

<sup>1</sup> The late Captain Ambrose H. Burrows (1785-1843) told of an exciting encounter with the Chilean (?) privateer *Quintinilla* off the Peruvian coast, when he was trading in 1823-1824, in the American brig *Frederick Enoch*. Brutus Burrows, the captain's son, then only a lad of sixteen, had a part in the affair. The story comes directly from the John Packer Association *Bulletin*, VIII, no. 1 (December 1946) of which Mrs. Carl C. Cutler is editor, through the kindness of Miss Joanna C. Colcord.

<sup>2</sup> . . . 'The Burrows yard, just the other side of the stream in Groton, was not idle. Its most noteworthy production . . . was the steamer *Cadet*, launched in 1825 for Silas E. Burrows . . . scarcely half a dozen steamers had been built outside of New York, the birthplace of the steamship. . . . Silas E. Burrows, whose association with Garibaldi, Emperors of South America, the Czar of Russia and Presidents of the United States, reads like a romance. He founded one of the great houses of China, and had establishments in Valparaiso and Buenos Ayres.'

Carl C. Cutler, *Mystic: the Story of a Small New England Seaport*.



Having disposed of most of my cargo and repaired my vessel, I chartered her to take a cargo of dry-goods to the windward, for the purpose of trading with Spanish ports in Peru. I had obtained a license from the Patriot Government for that purpose. The fact that one of my charter-parties stood very high as a true 'patriot,' and one of the head contractors for supplying the government, . . . shows in what manner the war was prosecuted. While they were clothing and feeding them with the one hand, they were fighting them with the other!

After completing my lading and preparations for sea, on the 1 September 1823 we sailed for the port of Pisco, lying sixty or seventy degrees southeast of Callao. On the 7 September, we cast anchor off Pisco, in an open roadstead. (At the full and change of the moon there is always a heavy swell heaving in from the westward, which makes landing at such times difficult and often dangerous.) I had on board two supercargoes, one of them a Frenchman and the other a Dane. Pisco being at this time in the possession of the Patriots, the Danish supercargo commenced a trade with the inhabitants, while the Frenchman loaded a number of mules, and left for a small town fourteen leagues in the interior of the country, called Echor, at this time in possession of the Spanish.

On the 27 December, we arrived at Quilca.<sup>3</sup> It being too late in the day to get in to anchor, I concluded to lay by until morning; but about 10 P.M. we discovered a sail close on board. I hailed to know what vessel it was; but instead of an answer, we received a broadside from her. After firing several shots into us and finding that we did not return the compliment (not being armed for that purpose), he hailed and ordered me to come on board with my papers. I obeyed the order, though he still continued firing until I got alongside, his shot passing through the sails of our vessel. On my arrival on board, I found her to be the armed brig *Quintinilla*, commanded by an Italian by the name of Mataleana. [she mounted] 12 twelve-pound cannonades [carronades?], with a Long Tom amidships, and two brass bow-chasers, and [was] manned with a complement of 100 men, fitted out from the Island of Chiloe,<sup>4</sup> and commissioned by the Governor of the island. Under that commission, he captured all he fell in with, of inferior force to himself, without any respect to nation or color.

After learning the character of my vessel and what my cargo consisted of, he sent his first lieutenant with a boat's crew to take charge of my vessel, and had my supercargo and crew, with the exception of my first officer, brought on board the pirate (?) brig.

<sup>3</sup> Still in Peru; quite close to the port of Mollendo.

<sup>4</sup> Chiloe Island is down in Chile.

Soon after this time, a breeze springing up, both vessels stood along the coast to the southeast; and by sunrise the following morning, we were nearly abreast of a port where he intended to take my brig and land the cargo. But before getting in to the anchorage, the man at the mast-head discovered a sail; and when nearing her a little, we soon discovered her to be the United States 74-gun ship *Franklin*, Commodore Stewart, standing in for the same port. On perceiving her character, our piratical commander, not wishing to form any acquaintance with the Commodore . . . had both vessels immediately hauled off shore, and by 11 o'clock we had gone a good distance from the land.

Then the pirate captain informed me that he had concluded to send my vessel to the island of Chiloe, at the same time telling me that I might have my choice—to remain on his vessel, or to return to my own, navigate her to the island and deliver up my cargo. The Governor would then give me up my vessel and pay me my charter. Although I did not put any confidence in the pirate captain's promises, I thought of the old saying that 'when you get your hand into the lion's mouth, the best way is to get it out as easy as you can!'

I concluded to go on board [the *Frederick Enoch*] and promised to navigate her to the island, then about two thousand miles distant. And now, forming my own opinion of the honor and veracity of this Royal Governor to whom I was consigned, by the character of his captain, I determined to fulfill my promise to the letter no longer than it was to my interest to do so, as I felt under much higher obligation to myself and the owners of my vessel and cargo.

It being now about 12 o'clock and nearly calm, after receiving my orders from the pirate captain I was sent on board of my vessel. They commenced taking from her such articles as they stood in need of, or as best suited their fancy, such as provisions, liquors, sails, rigging, and a quantity of dry-goods. While they were conveying the same from my vessel to theirs, I got into conversation with the lieutenant on board of my vessel, who informed me how he happened to be in the situation in which I found him. He was an Englishman by birth, by name Robinson, and had formerly commanded a man-of-war brig in the Chilean service. He had taken a very active part in the Patriot cause; but was captured by this pirate, and, to save his life, had enlisted.

. . . The pirate, having now taken all that he wished from the *Frederick*, at 1 P.M. sent a prize-master and nine men on board, and took Lieutenant Robinson and my chief mate, who had hitherto remained on board, leav-

ing none of my former crew with me except my son Brutus,<sup>5</sup> a lad of sixteen years, whom I prevailed on the pirate captain to let me retain.

On my first arrival on board my own vessel from the pirate brig, I took care to secure my pistols, together with those of my mates, and also some powder and balls, which I stowed away in my stateroom. As they were dependent on me to navigate the vessel, no one was allowed to enter my room except myself and my son.

Soon after the arrival of my prize-master and crew on board, we made sail and stood off shore. At sunset, we were out of sight of the *Quintinilla*. After a short acquaintance with the prize-master, I learned he was a North American, and the only one they had on board the pirate. He had lived several years on the island of Chiloe, and had a wife on that island. The rest of the crew consisted of one Englishman and eight Spaniards, or natives of the country.

For some days, I had strong hopes of falling in with some man-of-war that would recapture the vessel and save me the trouble and risk of undertaking it myself. But I had now been in their possession seven days without seeing any prospect of being recaptured; and as I had determined from the time I was first captured by the *Quintinilla* not to go to the island of Chiloe, I thought it high time to see what I could do for myself; and I decided that not another day should pass before I either [recovered] my vessel, or lost my life in the attempt.

I accordingly loaded my pistols, putting two balls and several buckshot in each. I informed my son Brutus of what I intended to do, and at 1 P.M. had everything prepared for the occasion, with my belt secured around me [and] with my cutlass by my side, and my pistols in prime condition. I then sent my son on deck to invite the prize-master into the cabin. On entering, and finding the cabin table covered with pistols instead of a good dinner, his astonishment may easily be imagined, and his countenance indicated that the latter would have been by far most agreeable!

I then informed him what I was about to do, telling him at the same time that he could have his choice: to join me, or remain neutral. But, as he manifested no disposition to take part in the contest, I told him I wanted no assistance from him, telling him at the same time that if he attempted to make any resistance, his life should pay the forfeit. I then placed one pistol in my belt and, taking one in each hand, I told Brutus to take the others and follow me on deck, saying to him, at the same time, if

<sup>5</sup> Captain Brutus Burrows (1806-1886), of Mystic River, died in the eightieth year of his age. A sailor from boyhood, he followed the sea from the forecabin to the quarter-deck as captain, till past middle life. He had many thrilling and exciting adventures, but his father only touches in part upon his son's exemplary conduct when he was a boy of sixteen.

I discovered in him the least sign of fear, I would forever disown him as [my] son.

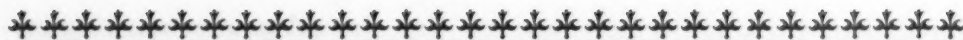
Upon coming on deck, I found no one abaft the companionway except the man at the helm. I turned to him and gave him to understand that if he left his post, I would shoot him. Our long-boat being stowed amidships over the main hatch, and the men on deck upon both sides of her, I directed my son to go on one side while I went on the other, and to drive them all in to the forecastle. The cowardly fellows did not want speaking to the second time, but they all jumped like a flock of sheep over a stone wall! When I got them all below, I ordered the boatswain, who was the leader of the crew—a big, two-fisted fellow, who looked as if he was able to handle half a dozen men—to come on deck; and, after lashing his arms snugly behind him, with some stout lines which I had previously prepared for that purpose, I ordered them all on deck, one at a time, and secured them all in the same manner, except the prize-master and two others, whom I kept loose for the purpose of working the vessel. The seven men who were tied I placed in the steerage, and secured them in such a manner that they were unable to release themselves or each other. Having them now secure . . . and not wishing to keep them [on] board any longer than was necessary, I hauled in for the land, which was then about 300 miles distant, intending, when I got near enough, to give them a boat and let them take care of themselves. We now had a good breeze, and the next day, at 2 P.M., we were about 150 miles from land, and myself about fagged out with watching them. I then had my whale-boat hoisted out; and, after fitting her with sails and oars, and putting in as much provisions and water as I thought necessary, I put the seven men whom I had confined, into her; and, giving them a compass, I directed them how to steer for the land. I then cast one loose, to give him a chance to loose the rest, and setting them adrift, I shaped my course for Callao.

During the time they had charge of my vessel, they had broken open every box and bale of goods they could get at, and every man had filled his bag with such articles as he thought would be the most likely to please his wife or sweetheart on his arrival at the island [of Chiloe]. But, as their authority had now ceased, and I had the legal power in my own hands, before putting them into the boat I had their bags brought on deck and the contents turned out, which was evidently not very pleasing. But their present situation did not allow of any remonstrance on their part, and they bowed in silence to the fate that awaited them!

Having got clear of the boat with the seven men whom I considered the most turbulent among them, I did not apprehend any difficulty with the



three I had with me. On the 7 January 1824, three days after retaking my vessel, [I] arrived safely at Callao; and at three o'clock in the morning, cast anchor among the shipping. At 8 o'clock, only five hours after, the *Quintinilla* made her appearance off the harbor, but was glad to retreat!



## The Scottish Lady

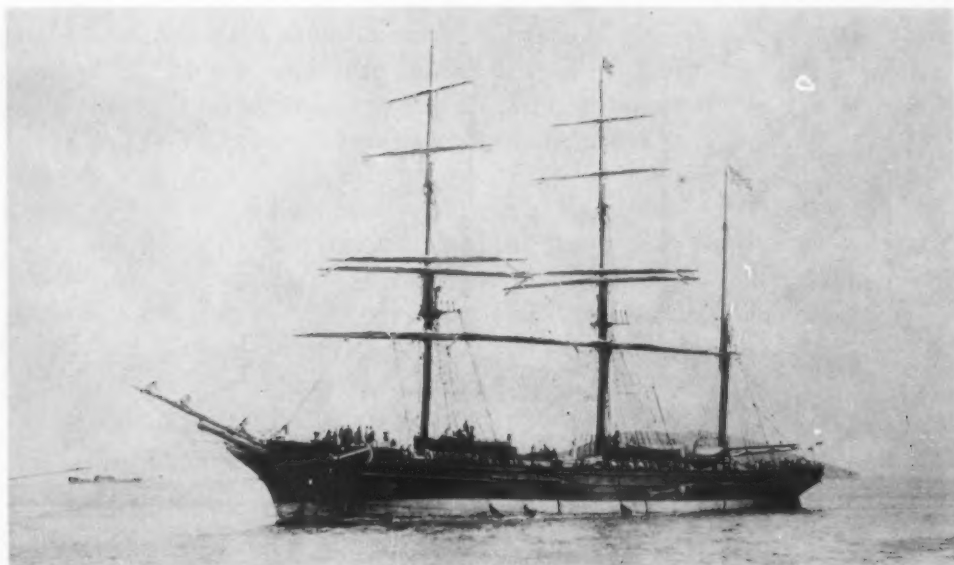
BY HAROLD D. HUYCKE

OF the nineteen iron and steel vessels once owned and operated by the Alaska Packers Association of San Francisco, it may be noted that two of the three oldest ships in the fleet have outlived all the rest. One of the three was the iron bark *Star of Peru*, built in 1863 as *Himalaya*, which sailed away twenty years ago to become a hulk. The two survivors are iron vessels of similar size and age: the bark *Star of India* built in 1863 as *Euterpe*, now lying in San Diego, and the four-mast schooner *Scottish Lady* laid up in Lake Washington near Seattle.

*Scottish Lady* was launched in October 1868 as the ship *La Escocesa*, from the yards of Gourelay Brothers of Dundee, Scotland, having taken ten months to build. She was not a large ship compared to standards which followed in the eighties and nineties, but registered only 1001 tons gross, 873 net, her measurements being: 202 x 34.2 x 21.3. Her hull was built of Swedish iron which has showed very little deterioration during the intervening years. After a long life of seventy-nine years, during which she was dismasted, sunk in collision, converted to various rigs, and operated in all the seven seas, her existence today speaks well for the quality workmanship of her Scotch builders.

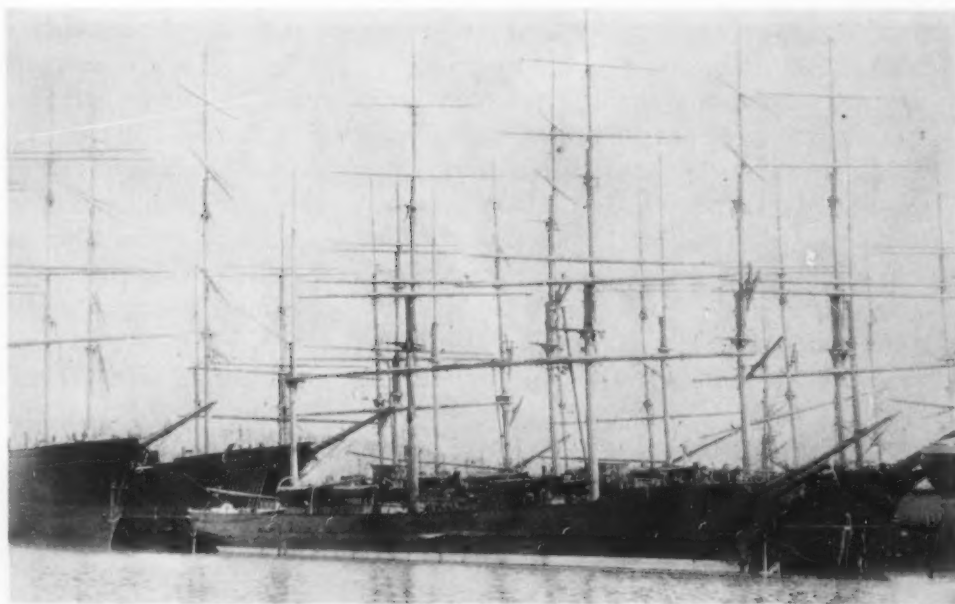
The original sail plan of *La Escocesa* included a single main sky-sail above royals, single topgallants and double topsails, in addition to studding sails on the fore and mainmasts. Her clipper bow, adorned with female figurehead, and slightly rakish masts, gave her a smart appearance. She had a raised fo'c'sle head but very low poop scarcely 20 inches higher than the main deck level. Solid bulwarks around the stern made her look like a flush-decker, there being no large houses or structures on the poop.

*La Escocesa* was a family ship during the thirty years of her British ownership and very likely a happy one. Captain David Evans took her from the stocks for Balfour, Williamson & Co. of Liverpool who operated her in the Australian, Chilean and San Francisco trades. On the eve of de-



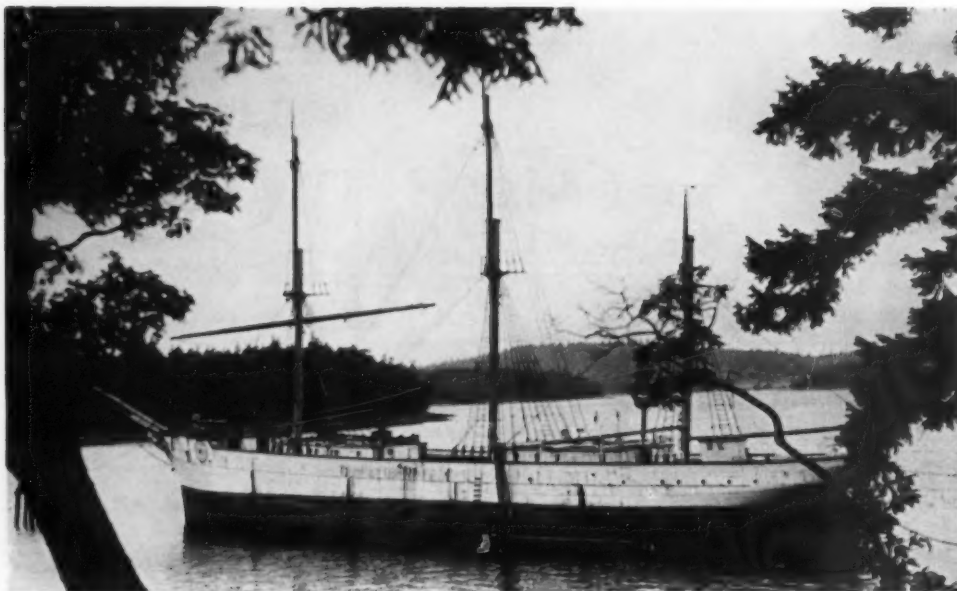
Towing out 22 April 1922 on her last fishing voyage for the  
Alaska Packers Association

*Reproduced from a photograph owned by Edward Strong Clark*



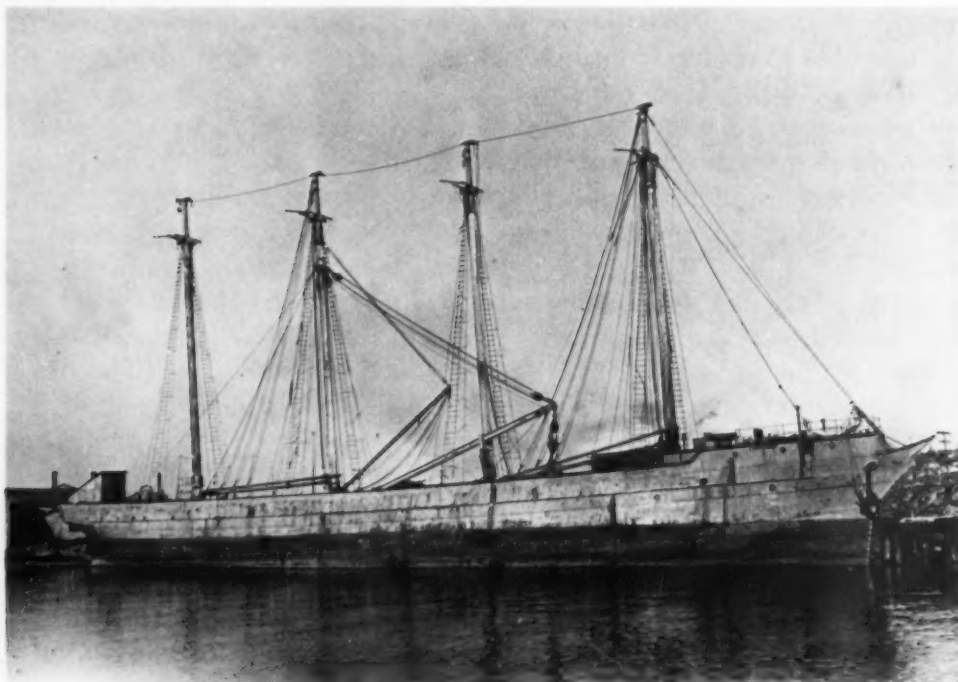
Bark *Star of Chile*, ex-*La Escocesa*, ex-*Coalinga*

*Reproduced from a photograph by Nautical Photo Agency*



*Barge Roche Harbor Lime Transport, ex-La Escocesa, ex-Coalinga, ex-Star of Chile,  
at Roche Harbor, Washington*

*Reproduced from a photograph by Williamson's Marine Salon Photo Shop*



*Schooner Scottish Lady, ex-La Escocesa, ex-Coalinga, ex-Star of Chile,  
ex-Roche Harbor Lime Transport, in her last rôle*

*Reproduced from a photograph by Williamson's Marine Salon Photo Shop*



parture on the vessel's maiden voyage, Captain Evans was married and took his bride to sea with him in the new ship. Lubbock states in his *Downeasters* that Captain Evans had his whole family living aboard the ship with him, at one time having two sons and a son-in-law filling the officers' positions.

In January 1871 *La Escocesa* arrived at San Francisco, 121 days out from Manila via Shanghai. She had put into the latter port in distress, having been dismasted down to her lower masts in a typhoon when 17 days out of Manila. From San Francisco the ship sailed to Queenstown, Ireland, in 124 days, reaching port the same day as the ship *Benmore*, the latter vessel being out 113 days from the Golden Gate.

*La Escocesa* left Liverpool 31 August 1871 and made the passage to San Francisco in 131 days, arriving on 10 January 1872. Two days after her arrival the American clipper *Young America* arrived from New York in equal time. Both ships were loading for Liverpool so considerable interest was taken in a prospective race. However *La Escocesa* took 122 days to Liverpool against *Young America's* 105 days and 112 days of *Glory of the Seas*. Again *La Escocesa* loaded for San Francisco, sailing from Liverpool on 7 October 1872 and arriving on 1 February 1873 after a 116-day passage. Upon her arrival she found that *Young America* had again beaten her, this time by 17 days, having taken 99 days on the voyage, 96 from pilot to pilot. *La Escocesa's* 83 days from the Mersey to the Equator in the Pacific had equalled the creditable time of the clipper's, but adverse winds had prolonged the balance of *La Escocesa's* voyage to the Golden Gate.

Both ships were loading in San Francisco Bay for the return to Liverpool and a lot of bets were made on what was to be a real race. *Young America*, a larger vessel by 444 tons, was then twenty years old—an age at which many of her contemporaries had become water-soaked and hulked. Captain Evans of *La Escocesa* claimed his ship to be the fastest, but odds were 5 to 1 in favor of the American clipper, which was a notably fast sailer. Captain Evans' best record in *La Escocesa* was probably 10 days 23 hours from Liverpool to New York against westerlies.

On the afternoon of 27 February 1873 they towed out of the Golden Gate together, both vessels being accompanied to the Heads by crowded tugs. Neither of the two ships made exceptional passages, but *Young America* arrived at Liverpool on 14 June, 106 days out, followed by her rival which arrived at Cork 14 days later. Reportedly \$20,000 changed hands in San Francisco and as much in England, Captain Evans being among the losers.

*La Escocesa* then loaded for Callao, but before leaving the Mersey was

run down and sunk. She was raised and refitted and continued in the trade between England and the West Coast, making occasional voyages to San Francisco. On 26 April 1879 she left Cardiff for San Francisco and had a slow passage of 150 days, not arriving until 22 September. She sailed for Cork for orders on 12 November. She arrived at San Francisco again on 6 April 1881, 118 days from Calcutta, which was not clipper time, sailing on 14 May for Cork again.

On 3 February 1898 *La Escocesa* arrived at San Francisco from Pisagua, Chile. Captain Evans was in poor health at this time, but recovered sufficiently to take the ship to Iquique. What proved to be his last voyage, and the ship's last voyage under the British flag, began on 29 July 1898 when *La Escocesa* left Iquique for New York. Captain Evans died at sea, being succeeded in command by his son, D. T. Evans, Chief Mate, who brought the ship into port. Some time before this Mrs. Evans had also died at sea.

In December 1898 the ship was again partially dismasted. She was repaired at New York and given bark rig, with all new spars except the fore and mizzen lower masts and the fore yard. On 23 March 1899 she left Gokey's Drydock in the Erie Basin to load at Carteret, New Jersey. She was towed by the tugs *James A. Garfield* and *McCaldin Brothers* and had ballast logs alongside; but her stability empty had been over-estimated, and she capsized in a puff off Robbins Reef, taking down *McCaldin Brothers*, which had been towing alongside. Merritt, Chapman and Scott raised the two vessels within a couple of weeks, and *La Escocesa* went back to Erie Basin to have several tons of mud cleaned out of her, but otherwise little the worse. The accident provided an opportunity to have the bark transferred to United States registry under the law relating to repaired wrecks, and this was done at Perth Amboy in May, with the new name *Coalinga*, Mr. J. L. Howard, a coal operator of San Francisco, as managing owner, and Captain Olaf C. Olsen master. She loaded her cargo of fertilizer at Carteret for Honolulu and went to sea again on 27 May 1899.

Under her new ownership *Coalinga* made some voyages to Chile and Peru, arriving at San Francisco from Caleta Buena on 9 September 1900. She arrived at San Francisco under Captain Olsen in 44 days from Callao on 9 March 1901, being sold three days later through Balfour Guthrie & Co. to the Alaska Packers Association of San Francisco, who added her to their fleet of vessels operated in the salmon-packing industry in Alaska.

Although the Alaska Packers were called an Association, they were in fact incorporated under the laws of the State of California in 1893. At that time there were a number of Pacific Coast-built schooners and bark-

entines operating in Alaska, some of which were among the assets of the new Association. The 'Frisco trade had been on the decline for a number of years, and a goodly collection of Downeast Cape Horners had found their way into the Alaskan fishing trade. By the time *Coalinga* became a salmon-packer, these wooden ships were already being replaced by iron and steel ships, most of which had just come under American registry with the annexation of Hawaii. After 1900 the Alaska Packers Association bought only iron and steel vessels.

On 22 March 1901, just ten days after her purchase, *Coalinga* began to load for her first voyage to Alaska, sailing on 14 April. Her voyage north took 57 days to Wrangell where she lay throughout most of the summer. She sailed for San Francisco on 18 August, arriving home on 8 September, 21 days out. The following year *Coalinga* went to the Ugashik Cannery in Bristol Bay making the outward passage in the more favorable time of 27 days. Her appearance had changed considerably by this time. Alaska weather with all its ice and bad weather required stout ships, but brass rails and white holy-stoned decks were not so necessary. Considerable alterations were made to convert these ships into supply-, cannery-, as well as cargo-ships although the annual time spent at sea seldom covered more than two months.

In the spring months the fleet was outfitted in San Francisco with all the supplies for catching and packing the salmon. Before the outfitting began one of the larger carriers would bring coal down from Nanaimo or other British Columbia ports to distribute to the rest of the fleet. Supplies of lumber were also picked up at Puget Sound ports to be taken to the cannery stations along the Alaska coast. Sailors in the fishing fleet were both sailors and fishermen, being hired as fishermen but receiving 'run-money' for the voyages to and from Alaska. In addition to the normal crew of the vessel, cannery hands, mostly Orientals and Mexicans were taken on board as passengers to work in the canneries during the summer months until the season ended in the late summer. All hands except the Captain and cook left the ship at the cannery station to live ashore. When the catch was made and canned, it was loaded in the ship's hold, the fleet 'racing' home before the ice packs set in. It can be seen therefore that because of these conditions the ships had to be altered to accommodate a large crowd, sometimes numbering well over two hundred, as well as carrying supplies and material for cannery work.

In 1904 and 1905 *Coalinga* made two rather longish passages north taking 51 days and 58 days respectively. In 1906 she sailed to Puget Sound, probably to load coal or lumber, thence to Alaska. During those first five

years her return trips to San Francisco averaged a little better than 23 days, the shortest being 21 days in 1905. From 1902 until 1906 *Coalinga* sailed to Ugashik, and from 1907 until 1919 she went to Egegak. Her last three voyages, 1920 to 1922 inclusive, were again made to Ugashik.

By 1906 the Association had become owners of four iron ships formerly of J. P. Corry's Irish Star fleet, these ships being *Star of Italy*, *Star of France*, *Star of Bengal* and *Star of Russia*. During this year the company changed the names of their iron and steel vessels to coincide with the four, *Coalinga* becoming *Star of Chile*. Two years later we find Captain Charles Hasse in command, and the vessel's cannery assignment changed to Egegak, Bristol Bay. Captain Hasse commanded *Star of Chile* until 1910 when he was relieved by Captain Carl Peterson, the latter staying with the ship until her final lay-up in the fall of 1922.

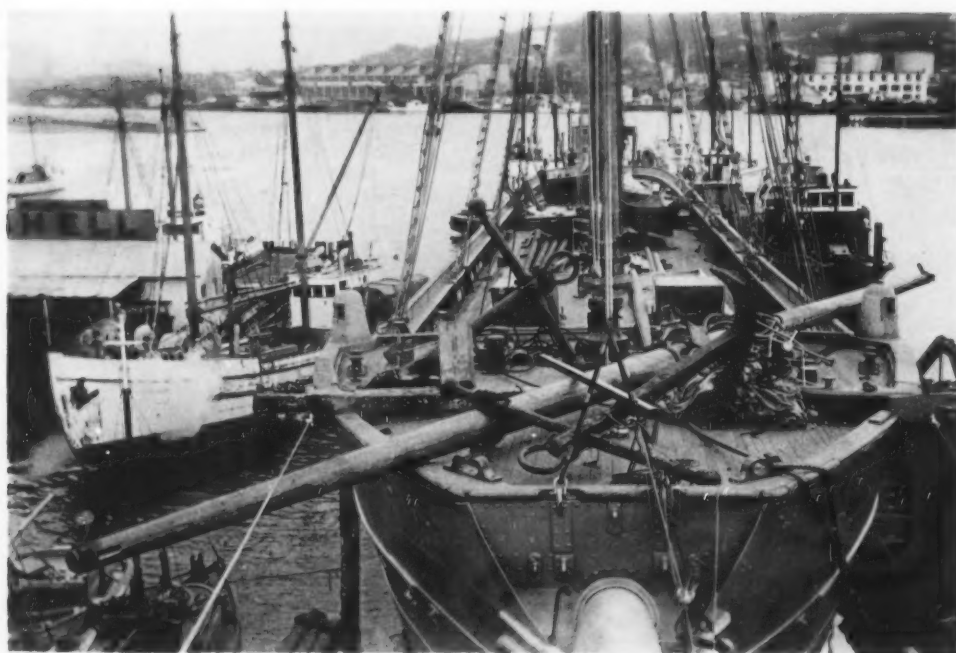
*Star of Chile* did not undergo major repairs or extensive overhauls until the winter of 1911-1912. By this time she was in her forty-third year and a very careful Third Survey was made in March 1912. The lower hold and fore lower fo'c'sle were thoroughly scaled and painted and deck-houses caulked, all ballast removed, bilges cleaned and cemented and a new spar ceiling furnished. In addition to minor repairs ninety-sixth berths were installed in the 'tween decks for Oriental cannery hands and accommodations made for eighty-seven white fishermen. The following year new quarters were built which provided some two hundred additional bunks, as well as staterooms and coal lockers.

The sailing performances of *Star of Chile* were not spectacular when compared to those of some of her larger sisters in the Packers fleet. Her average time from San Francisco to Ugashik was 31 days, the fastest being 17 days made in 1920 and the longest taking 55 days in 1918. Perhaps she was beginning to feel a little tired about the time World War I ended, but occasionally she made an attempt to clip off a fairly fast passage. Despite any efforts at speed and performance her days of service as a Packer were numbered because of her size. In 1921 a Special Survey #2 was held, where one strake of ceiling was opened on each side of the keelson fore and aft, and one strake of each side out in the bilges. She was over fifty-two years old and found to be in good condition, but by this time there were larger ships in the fleet. The two big Sewall-built four-masters *Star of Zealand* and *Star of Lapland* could lift over 5000 tons of cargo each, which amounted to about 152,000 cases of salmon. In her early days, *Star of Chile* loaded from 1490 to 1500 tons of wheat, and later on her capacity for cases of salmon was limited to approximately 37,000.





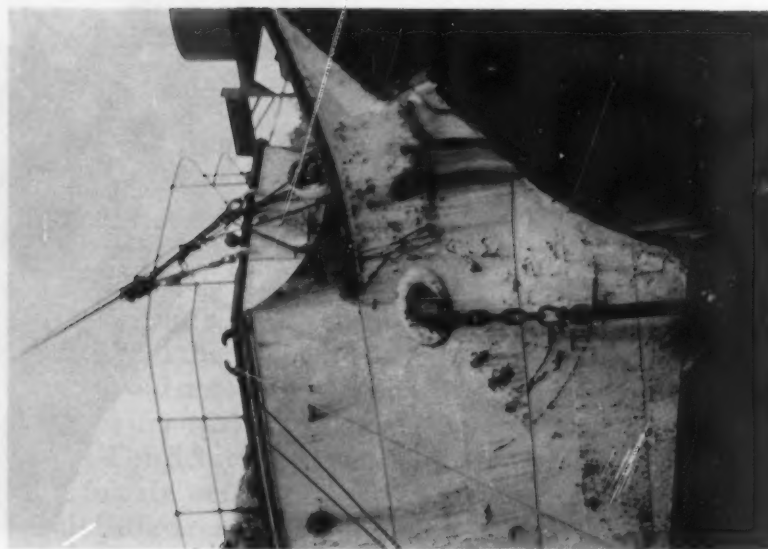
Unshipping the figure-head, 1942



At Lake Union, Seattle, Washington, 1941

*Schooner Scottish Lady, ex-La Escocesa, ex-Coalinga, ex-Star of Chile,  
ex-Roche Harbor Lime Transport*

*Reproduced from photographs by Walter W. Taylor*



Bow of schooner *Scottish Lady*, minus  
figure-head and bowsprit  
*Reproduced from a photograph by  
Harold D. Huycke*

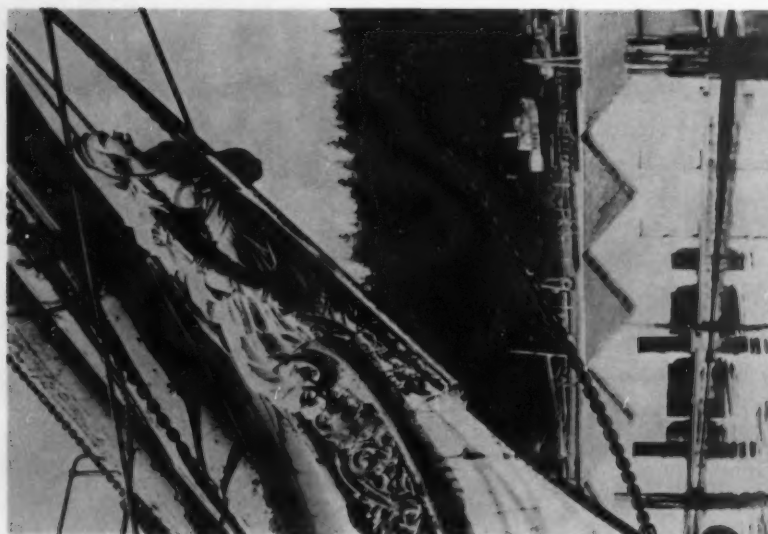


Figure-head of barge *Roche Harbor Lime  
Transport*  
*Reproduced from a photograph by William-  
son's Marine Salon Photo Shop*

*Star of Chile* made her last voyage north in 1922, (Plate 33) making the trip to Ugashik in 23 days. After returning home on September 5, her passage requiring 19 days, she was laid up in the company yard at Alameda. There she lay until 1926, inactive except for a four-day trip to the General Engineering drydock in April 1924. Finally on 23 September 1926 she was sold to the Roche Harbor Lime and Cement Company of Seattle to become a barge.

Being converted to a barge was a lowly enough reward, but to add insult to injury her name was changed to the unromantic one of *Roche Harbor Lime Transport*. (Plate 34) Her 'tween decks were altered to accommodate the lime cargo which was to be loaded in barrels and 100-pound rocks.

The San Juan Islands are the source of reportedly the purest limestone in the world and because of the relative disadvantage of being water-bound, the only means of transportation is via ship. Due to the demand at the time for lime in the San Francisco Bay area and the more expensive rates for hauling it overland from Washington, the Roche Harbor Company planned to operate the bark and another vessel under tow in order to meet threatened competition. Early in 1927 *Roche Harbor Lime Transport* arrived in San Francisco under tow of the steamship *Port Angeles*, with 12,000 barrels of lime which were consigned to the Pacific Lime and Plaster Co. Two months later she returned to Seattle on the end of the steam-schooner *Mukilteo's* tow-line, making a second voyage to San Francisco in May. In the middle of August she returned to Seattle, and later laid up in Roche Harbor moored fore and aft to dolphins. The auxiliary vessel soon foundered and the company's plan was abandoned before the year was out.

All the yards on *Roche Harbor Lime Transport* were sent down with the single exception of the fore yard, and the vessel's white hull became a familiar sight to Puget Sound yachtsmen who frequented the San Juan Islands. Every year or two her owners beached her for a look at the bottom and a paint job, but that was the extent of their activity with her.

During the 1930's, the prospects for using a sailing ship of *Roche Harbor Lime Transport's* size for anything besides a barge or scrap were indeed remote. However the start of the war in Europe in 1939 began to affect shipping facilities throughout the world, and numerous old ships came out into the sunlight again. The most promising outlook on the Pacific Coast was hauling Northwest lumber to British and Portuguese South African ports. Ships that could not be sold for \$10,000 in the poor years

of the early thirties brought inflation prices and were outfitted on a similar scale. Lumber was at a premium in South Africa and it was to Durban and Capetown that most of the revived sailing ships went.

By July 1941 most of the serviceable sailing ship hulls to be had were either in the process of conversion into sailing ships again, or were already under charter. Of course the larger the hull the larger the cargo, but even a small ship would pay a profit if given a chance. The bark *Star of Finland* was the first to go, loading a little over a million feet in Grays Harbor for Durban. She sailed in September 1941 under the Panama flag as *Kaiulani*.<sup>1</sup> The wooden schooner *Commodore* followed *Kaiulani*, going to Capetown. The two ex-four-mast barks and ex-gambling hulks *Tango* and *Rex*, the latter being renamed *Star of Scotland*,<sup>2</sup> were recalled to service and rigged as six-mast schooners, both sailing early in 1942. The big *Daylight* was also rigged as an auxiliary four-masted barkentine and sent to sea, later being purchased by Brazilian owners. The wooden five-mast schooner *City of Alburni* loaded lumber for South Africa but ended up in Valparaiso in distress nearly a year later. Most of these made a poor showing and none returned to the Pacific Coast again.

*Roche Harbor Lime Transport's* recall came in the fall of 1941. Mr. A. B. McCollum of Chicago bought her as she lay and secured a lumber charter with J. J. Moore Co., in advance to load 900,000 feet of lumber in Grays Harbor for Beira, South Africa. 7 December saw the old ship, now in her seventy-third year once more on the end of a tow-line, this time on her way to the outfitting dock. The job of towing the vessel from Roche Harbor to Lake Union, Seattle, occupied the best part of the day and the ship was without a radio. The first news of the Japanese attack on Pearl Harbor came aboard with a detachment of Marines who held up the ship at the entrance to the locks for searching. Late in the evening, after it was decided that no invasion or demolition forces were battened down below hatches, *Roche Harbor Lime Transport* was put in the Lake Union drydock.

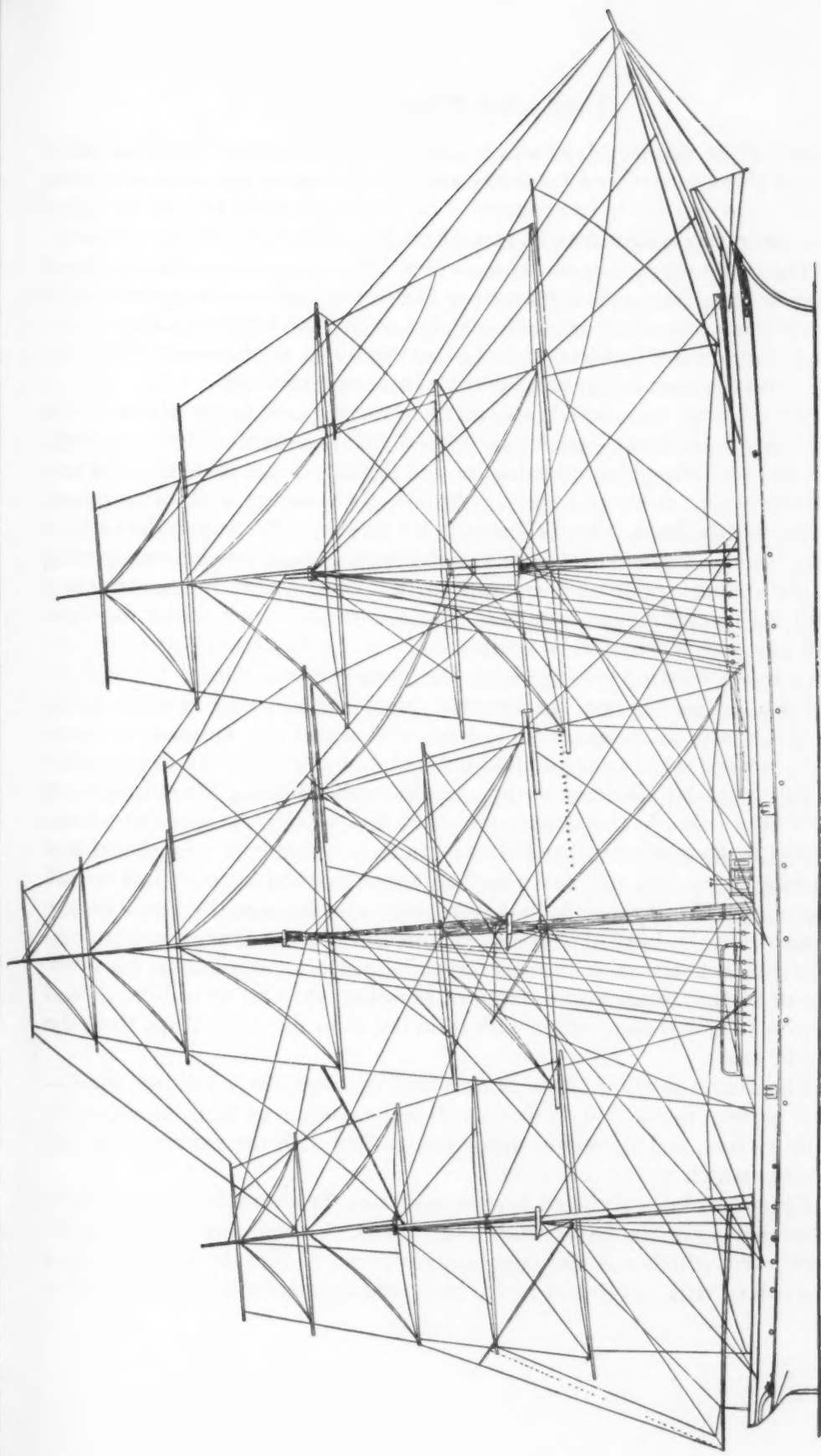
The exigencies of war made difficult the conversion and outfitting of the ship, which task was given to Captain John Bertonccini of Seattle. By this time the vessel's name had been changed to *Scottish Lady*, the American equivalent of her original name *La Escocesa*.

*Scottish Lady* had a thorough going-over. She spent three months at drydock having hatch-combings raised, new planking laid on deck, new masts stepped, deck-houses torn down and replaced, and other major altera-

<sup>1</sup> John Lyman, 'The Bark *Kaiulani*,' *THE AMERICAN NEPTUNE*, II (1942), 172.

<sup>2</sup> John Lyman, 'The *Star of Scotland*, ex-*Kenilworth*,' *THE AMERICAN NEPTUNE*, I (1941), 333-344; 'The Last Voyage of the *Star of Scotland*,' *ibid.*, III (1943), 266.





Rigging plan of *La Escocesa*  
Reproduced by courtesy of Mr. Walter W. Taylor

tions. While her iron hull was found to be in excellent condition after nearly three-quarters of a century, the old steel masts were found rotting at the steps and had to be replaced. The thoroughness of her reconversion and surveying is illustrated by an interesting discovery which was made. While removing a zinc plate from under the galley stove, probably placed there to keep hot coals from setting fire to the deck, an old piece of silk was found with a fine original sail plan of the full-rigger *La Escocesa* inscribed upon it. How long it had been there was an unanswerable question, but who put it there and why was more perplexing.

*Scottish Lady* was already too small to carry a real cargo of lumber so every available foot of space was utilized, inside and out. Three old deck-houses, including the 'work-house' and donkey-house of Alaska Packers days were torn down and replaced by a single house set well forward next to the fo'c'sle head. The old fishermen's bunks in the 'tween decks were also torn out. Gas engines were installed for running winches and getting in the anchors; another gas engine with a dual system for lighting was added. In stepping the four new pine masts, new strips under the deck and new partners had to be built to convert the ship from a three to four mast vessel. Getting iron work for the masts presented another problem, but the old barkentine *Conqueror* supplied these as well as other badly needed material. *Conqueror* had been laid up in the Duwamish River since her arrival in 1934 and had little chance of going back to sea again.

The final date for completing repairs and outfitting the ship was set for 1 May 1942. As this date approached the vessel was towed from Lake Union to Barbee's yard in Ballard where her topmasts were fitted and rigging set up. Her new sail plan had been designed for practical as well as economical purposes. A single yard was to be slung on the foremast, the square sail to be brailed into the mast instead of the conventional method of furling it to the yard. In these days of steam- and motor-ships the problem of finding experienced deep-water sailing ship crews is difficult and *Scottish Lady* was confronted with it no less than the other ships from the Pacific coast.

The dimensions for masts, booms and topmasts are as follows: masts—fore, 52 feet, main 56 feet, mizzen 56 feet, spanker 53 feet. All topmasts to be 33 feet, and all booms measured 40 feet with the exception of the spanker which was 50 feet long.

*Tango* had been rerigged as a six-mast bald-headed schooner, a simple rig requiring no excessive work aloft. *Star of Scotland* was given a leg-of-mutton rig which was also comparatively easy to handle. *Scottish Lady's* new suit of sails, cut in San Pedro by an old-time sail-maker, included in

addition to the four mainsails, four gaff-topsails, a ringtail on the spanker, three jibs and the square sail on the foremast. To date these sails lie unused in a Seattle store-house.

As final plans were being made in May, the Government stepped in and requisitioned the vessel for hauling road-building supplies to southeast Alaska for the construction of arteries into the Alcan Highway. She was chartered to the Elliott Company of Seattle, which was the government agent for hauling the supplies, and was made ready for her newly acquired job. It was to be just hard work and no sailing required, so the ship's newly painted figure-head was removed, bowsprit cut off and top-masts sent down. (Plates 35, 36) Under tow of the tug *Iroquois*, *Scottish Lady* made a round trip to Ketchikan and returned to Seattle. On her second voyage to Ketchikan the poor old lady jammed herself on some rocks at Mabel's Island and did considerable damage to her hull below the water-line. In the general excitement of trying to repair the ship and save the cargo the wheel was broken off and a small fire started on deck.

A temporary concrete patch kept the water out until *Scottish Lady* could be towed to Prince Rupert, B. C., where she arrived late in 1942. The frames had been badly bent and eight to ten foot holes had been torn in the bottom. Permanent repairs had to wait until after the war emergency, so an improved temporary patch was made over the damaged plates. By this time *Scottish Lady* was in bad shape, but she could still float. She was towed to Seattle and laid up in Lake Union, later taken to Kenndale and tied up with some old steamers where she is today.

Such damage as *Scottish Lady* suffered is hardly worth repairing. Her chances of going to sea under sail are indeed slim, but her battered old hull may be of some use yet. With her bowsprit cut off and figure-head gone, the poor ship has lost her dignity and charm. If ever a ship needed a friend, *Scottish Lady* needs one now.

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## *Early Great Lakes Steamboats*

### *The Caroline Affair*

1837-1838

BY H. A. MUSHAM

CAROLINE was a small steamboat—in fact a very small steamboat, —but one that attained a prominence out of all proportion to its size, and one whose destruction became an international incident which almost plunged the United States and Great Britain into war. *Caroline* was built at New York by Commodore Vanderbilt in the early eighteen twenties, used there for a time, and then sold to a party of gentlemen in North Carolina for \$6,000.00. They operated her for a while on Albemarle Sound and then sold her back up north. She was returned to New York,<sup>1</sup> and in 1834 was taken up the Hudson and ran for a short time as a ferry between Albany and Troy. After this she was dismantled, the side wheels being removed and the superstructure taken down, and was then towed through the Erie and Oswego Canals and taken to Ogdensburg. The hull was built of live oak, and now being in bad condition, was rebuilt there, from the light water-line up, and the wheels and deck works refitted. She was again operated as a ferry, this time across the St. Lawrence to Prescott. Evidently she was not successful in this service and she was moved on once more, this time via the Welland Canal to Lake Erie and to Buffalo where she appeared in June of that year and was hailed as a steamboat curiosity. There she was put into service between Buffalo and Port Robinson on the Welland Canal by way of the Niagara and Chippewa Rivers under Captain James Ballentine. Smuggling is said to have been one of her activities.<sup>2</sup> On 1 December 1837, she was sold by her owner John B. Mason to William Wells of Buffalo for \$800.00, and laid up in the ship canal for minor repairs.

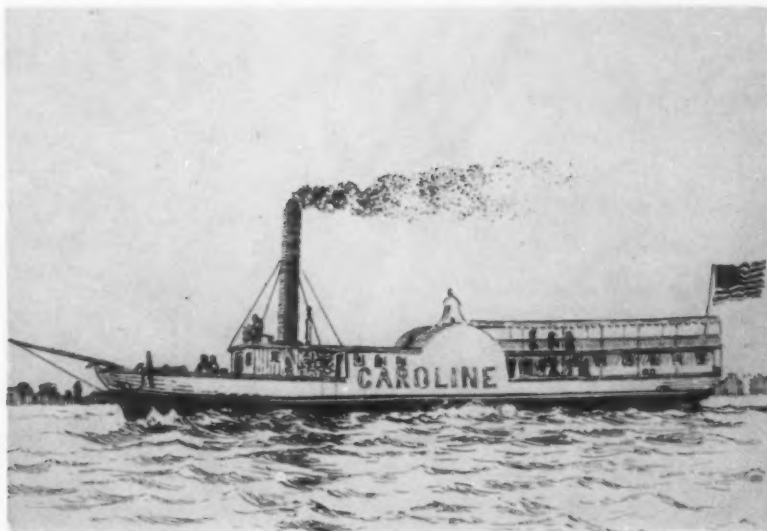
<sup>1</sup> James Van Cleve, 'Reminiscences of Early Sailing Vessels and Steamboats on Lake Ontario,' Manuscript in Chicago Historical Society, pp. 85-86. Captain Van Cleve's manuscript has been drawn upon in the preparation of four earlier articles in *THE AMERICAN NEPTUNE*: 'Early Great Lakes Steamboats—The Ontario and the Frontenac,' III (1943), 333-344, 'Early Great Lakes Steamboats—The Walk-in-the-Water,' V (1945), 27-42, 'Early Great Lakes Steamboats—1816 to 1830,' VI (1946), 194-211, and 'Early Great Lakes Steamboats—Westward Ho! and Flush Times 1831-1837,' VII (1947), 42-65.

<sup>2</sup> Frank H. Severance, 'Historic Figureheads,' *The Book of the Museum* [Publication of the Buffalo, N. Y., Historical Society], XXV (1921), 196. *Chicago Democrat*, 9 July 1834.





Figure-head of steamboat *Caroline*  
*Reproduced by permission of the Buffalo  
Historical Society, Buffalo, New York*



Steamboat *Caroline*  
*Reproduced from the John Ross Robertson  
Collection, by permission of Toronto  
Public Libraries*



Her enrollment at the Port of Buffalo gives her a length of 71 feet, a breadth of 20.5 feet and a tonnage of 45 95/100. She was a single decker with a cabin on the main deck. Her engine was of the square low pressure type. She had a clipper bow with a short bowsprit, and carried a tall smoke-stack, but no masts. The stem carried a figure-head (Plate 37)<sup>3</sup> 19 inches high, a well carved and altogether pleasing head and bust of a plump and dainty lady, wearing a coronet above her ringlets, presumably representing Queen Caroline,<sup>4</sup> consort of George IV.

The season of 1837 had closed quietly but not without signs of the storm coming in the Canadas.<sup>5</sup> The trouble which had been brewing since before the War of 1812, grew out of the maladministration of their governments, and the factiousness of their peoples. Nominally each province was governed on a representative basis,<sup>6</sup> but actually their affairs were in the close grip of small entrenched groups<sup>7</sup> which dominated the governors sent out by the Crown, and in their own interests.

French Canadians predominated in Lower Canada, while in Upper Canada, the population was made up of immigrants from England, Scotland and Ireland with a large proportion coming from the United States. Most of them were dissatisfied with the oppressions visited upon them by the Loyalist ruling minority, as were the French Canadians. The distress caused by the hard times aggravated their discontent and their leaders, despairing of securing justice from their governments, united in 1837, in a movement to rebel and win their independence as a nation with a view to possible annexation to the United States. The first outbreaks took place in the lower province in October. British troops were quickly moved by Sir John Colborne<sup>8</sup> to the localities involved and by the middle of December, the rebellion there appeared to have been crushed. The Americans of the northern frontier, with few exceptions, strongly sympathized with the rebels. To restrain them, President Van Buren issued a neutrality proclamation on 21 November, calling upon them to obey the laws of the country and warning them that should they fall into the hands of the Canadian Governments, they would receive no aid from that of the United States. To all of this they gave but little heed.

<sup>3</sup> Now in the museum of the Buffalo Historical Society, Buffalo, New York.

<sup>4</sup> Severance, *op. cit.*, pp. 194-196.

<sup>5</sup> In 1791 Canada was divided into Lower and Upper Canada; now the provinces of Quebec and Ontario.

<sup>6</sup> The provincial governments consisted of an assembly, legislative council, executive council and governor.

<sup>7</sup> In Lower Canada the group was called the Chateau Clique; in Upper Canada, the Family Compact.

<sup>8</sup> Acting Governor-General and in command of the British troops in both provinces.

In the upper province the rebellion had been more extensively organized by William Lyon Mackenzie, the leader of the reform movement there. Taking advantage of the absence of the British regulars in the lower province, he proclaimed the independence of Upper Canada and attempted to seize Toronto on 5 December, with a small force of rebels, but failed because of a confusion of orders. Another rising at Oakland, thirty miles southwest of Hamilton, was put down by a militia detachment under Colonel Allan McNab. A few rebels were captured in these two affairs. Mackenzie and others fled to the States. The rebellions to all outward appearances were now over.

Mackenzie reached Buffalo on 11 December and was welcomed with open arms. The following evening he was given an ovation at a large public meeting. The war for Canadian independence, better known as the Patriot War was initiated then and there. Arms, ammunition and other supplies were asked for and arrangements made to receive them. Volunteers were called for and a few of the more enthusiastic enrolled in the Patriot Army. Other meetings followed and an advisory body known as the Committee of Thirteen<sup>9</sup> from the number of its members was appointed. A provisional government for the Republic of Upper Canada was organized. Rensselaer Van Rensselaer, ex-cadet of the United States Military Academy, who aspired to be another Sam Houston, and who had been one of the first to join up, was appointed Major General and Commander-in-Chief of the Military Forces. An elaborate plan of campaign was drawn up for the invasion of Upper Canada with Toronto as the main objective. Navy Island,<sup>10</sup> on the Canadian side of the Niagara River three miles above the falls, was chosen as temporary headquarters and occupied on 15 December. There Mackenzie issued a proclamation establishing a provisional government for the State of Upper Canada, citing grievances and calling upon Canadians to rise and win their independence.

The Buffalo authorities protested these actions but the people paid no attention to them. The movement was now gaining strength. Meetings were held in other cities and towns along the frontier from St. Albans to Port Huron at which money, munitions and supplies were freely given. The principal lack of the Navy Island forces was of arms. To fill it the local armory was robbed of 200 muskets on 12 December, 130 of which were recovered the next day at Black Rock while being taken to Navy Island. Recruiting was actively carried on and about 400 men joined up. Commissions were passed out freely, an unduly large portion being for general and field officers.

<sup>9</sup> This committee functioned as a sort of general staff throughout the war.

<sup>10</sup> The Isle-la-Marine of the French regime.



These operations were very disturbing to the Loyalists of Upper Canada who had become very nervous over the possible invasion of the province by this force. To protect it, Lieutenant-Governor Sir Francis Bond Head<sup>11</sup> ordered a militia force of white men and Indians to Chippewa on the main Canadian shore just below Navy Island, placed Colonel McNab in command and re-enforced it until it had a strength of about 2,500 men. McNab on assuming command wrote to the public authorities at Buffalo urging that they prevent the furnishing of supplies to the forces on the island, stating that if this were done the whole affair could be closed without bloodshed, but they were unable to do it. There was considerable firing between the two forces, the Patriots especially taking pot shots at the militia sentries on the Canadian shore.

The pressing need of the Patriot force now was reliable river transportation, which only a shallow draft steamboat could furnish. *Caroline*, lying icebound in the ship canal at Buffalo, was suitable for such service, and Wells, her owner, was looking for business. On Christmas Eve, one Alexander McLeod, Deputy Sheriff for the District of Niagara on the Canadian side, whose duties called for him to cross the river frequently, heard in Buffalo that *Caroline* was fitting out to run down to Chippewa. The next day he heard the same thing at the Pavilion Hotel at Niagara Falls. Crossing over to Chippewa, he lost no time in telling the news to McNab. Wells had been approached by the Patriots with a view to hiring *Caroline* and went to Navy Island on the twenty-sixth, where he saw General Van Rensselaer, Dr. Chapin and a Mr. Flagg, the latter two, ardent patriots. They asked him to put the boat into their service. They told him he could make money in it. He didn't say yes and he didn't say no, but nevertheless applied to the Collector of the Port of Buffalo Creek for a clearance to carry passengers and freight between Buffalo and Schlosser<sup>12</sup> and intermediate points, and was given one. The Collector told him he could carry anything he liked, including guns. There was talk by some of the Patriots of an indemnity bond, but he did not ask for one, nor was one given him. *Caroline* was cut out of the ice on 28 December, at little expense to him or anybody that he knew of. A good many helped in the work.<sup>13</sup> McNab was worried about *Caroline* and on the morning of the twenty-eighth sent Captain Graham, one of his officers, and McLeod out in a boat rowed by eight sailors to locate her. They did not find her as she

<sup>11</sup> Head had resigned in the autumn, but remained in the country until his successor took over in the spring of 1838.

<sup>12</sup> Schlosser or Schlosser's Landing—Fort Schlosser of the colonial period—was the head of the old Niagara portage. It was three miles above the falls.

<sup>13</sup> *Trial of Alexander McLeod for the murder of Amos Durfee and as an accomplice in the Niagara River during the Canadian Rebellion in 1837-38* (New York: Sun Office, 1841), pp. 6-7.

was still at Buffalo. She left Buffalo on the morning of the twenty-ninth, with not more than a half dozen passengers. Her freight consisted of one cask of heavy articles and some others, for the transportation of which Wells was paid \$10.00. Gilman Appleby, a lake sailor, was captain and Wells was one of the engine-room force. *Caroline* stopped at Black Rock on the way down but took on no freight.<sup>14</sup> There she hoisted the American flag. As she left a volley of musketry was fired at her from the Canadian shore which did no injury. She continued on down to Navy Island unmolested, tied up to the scows moored there for a dock and landed her passengers and freight. She then crossed over to Schlosser, and that afternoon two trips were made to the island. Some muskets and an artillery piece were taken over, along with a number of spectators at twenty-five cents a head.<sup>15</sup>

These proceedings were nervously observed from Chippewa by McNab and Commander Andrew Drew, R.N., his naval aide, through field glasses. They discussed the possibility of stopping her further activities by seizing her. On McNab's orders, Drew reconnoitered the island and the landing at Schlosser that afternoon in a small boat, accompanied by one man and reported that she could be cut out. McNab became excited and ordered him to do it. A watch was posted to keep her under observation. At 5:00 P.M., it reported her to be at the island.

*Caroline* returned to Schlosser at 6:00 P.M. There she was made fast to the dock in Gill Creek with chains. During the evening 23 men, unable to find accommodations in the nearby tavern, came on board, asked for and were given sleeping quarters. At 9:00 P.M., a two-man watch was set. About midnight some of the crew returning from Niagara Falls, waked Wells and told him their bunks were occupied. He turned the strangers out of them. On board then was a total of 33 men, 10 of whom belonged to the crew. All were unarmed.<sup>16</sup>

At 11:00 P.M., after the moon had set, Drew set out for *Caroline* with 45 volunteers in seven boats. Believing her to be still at Navy Island, he went there first, but not finding her there he passed around the island, saw her lights across the river and set out for her.<sup>17</sup> About midnight, Wells went on deck and one of the watch told him a boat was approaching. He ordered him to look after it to see who was in it and then went below. A short time later the watch waked him and reported that four or five boats filled with armed men were approaching. Appleby was also informed.

<sup>14</sup> Ibid., p. 7.

<sup>15</sup> *Niles' National Register*, LIII (13 January 1838), 308.

<sup>16</sup> *Trial of Alexander McLeod*, 6. *Niles' National Register*, LIII (13 January 1838), 308.

<sup>17</sup> *Niles' National Register*, LIII (27 January 1838), 322.

The alarm was given but before the sleeping men could reach the deck, Drew's party boarded her at both bow and stern, crying: 'hurrah for Victoria,' and 'made war upon the defenseless crew and passengers with muskets, swords and cutlasses, under a fiery cry of—damn them, give them no quarters, kill every man; fire! fire!' They made no resistance and abandoned the boat, their only effort being to escape the slaughter.<sup>18</sup> The fracas lasted but two minutes.

Drew intended to take *Caroline* to Chippewa, but believing he could not tow her across with the boats, sent Richard Arnold, one of the party, below to light the boiler to raise steam. As Arnold reported it would take too long a time to do it, Drew decided to burn the vessel. A jar of oil clothes from the ladies cabin were strewn about the cabins. A jar of oil found on board was poured over them and all around the boat. She was released from her chains with some trouble by Edward Zealand, another of the party, and towed out into the stream about twenty yards. There she was touched off and abandoned to the current. There were two casualties in the party, Lieutenant Shepard McCormick, R.N., being desperately wounded and John Arnold, quite severely.<sup>19</sup> The boats returned to Chippewa, safely guided by a big beacon fire set by McNab, and were enthusiastically received, the cheering being heard at Schlosser. But there on the dock with his brains scattered about, lay Amos Durfee<sup>20</sup> of Buffalo, one of those who had been on board the *Caroline*. He had been shot in the back of the head, the ball coming out through the forehead.<sup>21</sup>

The current took the blazing *Caroline* downstream for a short distance, where she grounded on a bed of rushes. It released her after a time and carried her on, but she grounded again this time some distance above the falls. There the upper works burned off, the flames lighting up stream and shore and there she sank. She did not go over the falls.<sup>22</sup>

McNab elated at the success of the expedition immediately dashed off the following report to the Honorable Jonas Jones, A.D.C. to Governor Head:<sup>23</sup>

<sup>18</sup> Niles' *National Register*, LIII (13 January 1838), 309.

<sup>19</sup> Niles' *National Register*, LIII (13 January 1838), 309.

<sup>20</sup> Little is known about him other than that he was a stage driver.

<sup>21</sup> Niles' *National Register*, LIII (13 January 1838), 309.

<sup>22</sup> The charred hull remained there for a long time. It finally broke up, the pieces going over the falls. The bowsprit was picked up at Fort Niagara by Colonel E. Jewett, who gave it to a Mr. Molyneux, who set it up as a hitching post in front of his tavern, twelve miles east of Lewiston in the Ridge Road. The figure-head was also salvaged. The top of the young lady's nose was gone, but otherwise it was in good condition. It is now in the museum of the Buffalo Historical Society. (Plate 37) The engine remained in position and could be seen in the water for many years. It was finally salvaged by Jack Jewett and is in the museum of the Buffalo Historical Society. Van Cleve, *op. cit.*, p. 86.

<sup>23</sup> Niles' *National Register*, LIII (13 January 1838), 305.

Headquarters, Chippewa, Dec 30th, 1837  
Saturday Morning, 3' o'clock.

Sir: I have the honor to report for the information of his excellency the lieutenant governor, that having received positive information that the pirates and rebels had purchased a steamboat called the *Caroline*, to facilitate the intended invasion of this country, and being confirmed in my information yesterday by the boat (which sailed under British colors) appearing at the island, I determined upon cutting her out; and having sent Captain Drew of the royal navy, he in a most gallant manner, with a crew of volunteers (whose names I shall hereafter mention) performed this dangerous service, which was handsomely effected.

In consequence of the swift current it was found impossible to get the vessel over to this place, and it was therefore necessary to set her on fire. Her colors are in my possession. I have the honor to be sir, your ob't humble servant.

A. N. McNAB, Col. Com'ing

P. S. We have two or three wounded—and the pirates<sup>24</sup> about the same number killed.

Captain Appleby hastened to Buffalo and told his story to H. W. Rogers, Assistant District Attorney of Erie County and acting for the United States. He stated twelve men were believed to be either murdered or drowned and that *Caroline* had gone over the falls.<sup>25</sup> Another story was spread that some wounded Americans were on the blazing craft when it made the plunge. Durfee's corpse was taken to Buffalo and displayed in an open coffin on the piazza of the city hall. The crowds filed by, paid their respects and freely expressed their indignation. His funeral was made a public affair which a large crowd attended. The wildest rumors were rife. The Patriots were to be driven from Navy Island and the country was to be invaded. The northern frontier seethed. On 3 January, the grand jury at Lockport indicted McNab and his companions for the murder of Durfee.

The Loyalist elements in the Canadas were rapturous over the news. Governor Head approved McNab's action, commended and thanked Captain Drew and his men, stating he would lose no time in reporting their conduct to her Majesty's Government.<sup>26</sup>

The Patriot cause at this time was not making much headway. The cutting out of *Caroline* was the very last thing that McNab should have ordered done. Her destruction and the killing of Durfee made the situation worse. It put new life into a dying cause, gave it what it lacked heretofore, an effective slogan: 'Remember the *Caroline*,' and rallied the

<sup>24</sup> The British authorities in Upper Canada and the Loyalists had put themselves on a high moral plane and referred to their opponents as pirates, bandits, banditti, brigands and in other opprobrious terms throughout the war and for some years afterwards.

<sup>25</sup> *Niles' National Register*, LIII (13 January 1838), 309.

<sup>26</sup> *Ibid.*, p. 322.



American people to its support. What had been a thwarted rebellion now became an international affair. For this blunder, McNab was alone responsible. The old antipathy to the British now came out in full force and all over the states. The cry arose for war with them and their expulsion from the continent. The news reached Washington on 4 January 1838. President Van Buren immediately ordered Major-General Scott to the Niagara frontier to bring the situation under control. The next day he issued another neutrality proclamation, this time warning violators of arrest and punishment. It had about the same effect as that of 21 November.

The operations along the Niagara frontier were supplemented by a rising in the London district which accomplished nothing. In the meantime the Patriots along the Detroit River were keeping Brigadier-General Hugh Brady, in command of the Northwestern Department of the army at Detroit, busy trying to circumvent them. Hearing they had designs on the guns at Fort Gratiot, then ungarrisoned, he sent a detachment of troops there in *General Macomb* to guard them until they could be removed to safekeeping. The Patriots made an attack on Malden on 8 January, which got as far as Bois Blanc Island close to it, from which they were driven by a force of Canadian militia. *General Gratiot*, *Little Erie*, both American and *Alliance*, Canadian, played minor parts in this operation.

At Navy Island the situation was far from quiet. There was considerable musketry and cannon fire across the river between the Patriots and McNab's militiamen, heard at times as far as Buffalo and it made the people nervous. McNab was daily expected to attack the island but did nothing. The Patriots still held to their plan to cross the river, defeat McNab's force and march on to Toronto. A landing was to be made near or at Chippewa from yawls and flats to be towed across the stream by a steamboat. This they did not now have but hoped to get. The owners of *Barcelona*—about twice as large as *Caroline*—were interested. They cut her out of the ice at Buffalo and took her down the river to be offered to the Patriots. General Scott reached Buffalo on 12 January. Determined to prevent another *Caroline* incident and to curb the activities of the Patriots, he sent an agent to the owners and hired *Barcelona* for official use while the Patriots were trying to find sureties to pay for her loss or any damages incurred while in their service. Scott outbid them by \$500.00. The situation on the island was now becoming desperate. Food was running short, the weather had turned bitter cold and the shelter was most inadequate. Scott succeeded in convincing the Patriots at Buffalo of the

hopelessness of their situation. He hastened to the island and likewise convinced Van Rensselaer. But Van Rensselaer kept his force under arms on the thirteenth from sunset to midnight in readiness to embark for the attack to be made on Chippewa should *Barcelona* show up. The decision to evacuate the island was made by the Committee of Thirteen on the thirteenth and he agreed to it. The next day the troops were ferried across to nearby Grand Island, marched across it to the landing on its eastern shore where they were taken over to the mainland. There they gave up their arms and cannon except such as they were able to conceal. These were later moved by wagons to friendly farmers along the south shore of Lake Erie, who hid them for use in future operations.

McNab occupied the island on the fifteenth, the day on which most of the Patriot force boarded *Barcelona*, with some of their equipment, for Buffalo. The British had determined to destroy *Barcelona* as they had *Caroline* and this to prevent the Patriots from making an attack on Canada at some other point. Captain Drew had placed three armed schooners in American waters above the head of Grand Island, and supported them by batteries on the Canadian shore. He intended to sink *Barcelona* as she cleared it on her way upstream. Informed of this, Scott placed batteries below Black Rock to cover her passage, and informed the commander of the schooners on the fifteenth, by letter, that he was there with the Governor of New York and troops to enforce the neutrality of the United States and that unless the Patriots should attack first—in which case they would interfere—they would be obliged to consider a discharge of shot or shell from or into American waters from the schooners as an act seriously compromising the neutrality of the two nations. The next morning the same warning was repeated and explained to a captain of the British army who had visited the General on other business. He immediately went over to the schooners. About that time *Barcelona* was seen coming up the river. It was a tense situation out of which could come either war or peace. Better judgment prevailed on the British side and *Barcelona* was allowed to pass without molestation.<sup>27</sup>

Scott now turned his efforts to quieting the people and succeeded to a certain extent by the use of persuasion, he having no troops at hand other than the few he had picked up on his way to Buffalo.<sup>28</sup> At this time, no American military post along the frontier was garrisoned, nor were there any armed public vessels on the lakes except the revenue cutter *Erie* of 60

<sup>27</sup> Lieutenant General Winfield Scott, *Memoirs* (New York, 1864), I, 313-317.

<sup>28</sup> The regular army, actual strength about five thousand, was engaged in fighting Indians in Florida and the west.

tons.<sup>29</sup> Scott used *Barcelona* while moving up and down Lake Erie. He understood fully that the steamboats were the key to the situation. Without them the operations of the Patriots and their supporters, and the British efforts to suppress them, were impossible. Scott warned their owners that he would seize their boats if they sold or hired them to the Patriots or let them use them.

The Navy Island Patriots were supposed to have disbanded, but this was far from being the case. Fredonia, a small place three miles inland from Dunkirk, had been chosen as the rendezvous point for a force which was to assist in another assault on Upper Canada from Detroit and they were seen making their way long the shore of the lake to it. Their headquarters at Buffalo had succeeded in hiring the steamboat *New England* to move them on to Detroit. On hearing of it, Scott seized her for government service and put Lieutenant Stephen Champlin of the Navy in command. He also took over *Robert Fulton*. On 21 January, *Robert Fulton*, under Lieutenant Homans of the Navy, left Buffalo with a detachment of regulars in command of Colonel W. J. Worth, to disarm the Patriots. She reached Dunkirk the next morning. There the troops disembarked and marched to Fredonia where 300 Patriots were found. They surrendered to Worth who seized 390 stand of arms and moved them safely to *Robert Fulton*, which proceeded on up the lake with the troops, arriving at Detroit on 27 January. The weather was bad and there was considerable ice in the lake. Fear was expressed for the safety of the vessels in the government service. To facilitate navigation, orders were issued to put the lighthouses into service.<sup>30</sup>

Outwardly the frontier was quiet, but under cover the Patriots were preparing for another assault on Upper Canada which was set for Washington's Birthday. Three attempts at invasion were to be made. The first of these, which was to take Kingston, started on time but was a complete fiasco because of the incompetence of General Van Rensselaer. His force of 500, which marched from French Creek, crossed the arm of the river on the ice to Hickory Island and refused to continue on to the main Canadian shore. The second attempt at invasion was made on 23 February, when a force of about 400 Patriots, mainly from Cleveland, crossed the Detroit River on the ice to Fighting Island<sup>31</sup> on the Canadian side. They had depended on securing the muskets, cannon and other supplies

<sup>29</sup> Ex-Lewis McLean. Sold after several years service and taken to Lake Michigan where she was put into the lumber trade. She was sunk off Marblehead, Ohio, in the gale of 30 August 1872. See THE AMERICAN NEPTUNE, VII (1947), 48.

<sup>30</sup> Niles' National Register, LIII (3 February 1838), 353.

<sup>31</sup> Now Turkey Island.

of the Navy Island force, which were for the most part seized by Colonel Worth at Fredonia. They were practically unarmed and were easily driven from the island by British troops attacking across the river on the ice. The steamboat *Little Erie* was used by the Patriots in this operation as a supply ship. These attacks were to be supported by an invasion from Vermont, but this attack like that on Kingston was also a fiasco. The Patriots were caught between British and American forces and allowed to return to Vermont. Another attack was made early in March from Sandusky Bay. The lake was frozen over with ice fifteen inches thick. About one thousand Patriots crossed on it to Pelee Island in the last days of February and were driven off on 3 March by a force of British troops under Colonel Maitland.

After all these failures, the Patriots subsided for a time and the frontier quieted down. On 10 March, Congress after much debate, passed a new neutrality law. This gave the President the power to use the military and naval forces and the militia to enforce it. Federal officers and others empowered by the President were authorized to seize or detain any vessel, arms, munitions of war provided or prepared for any military expedition of foreign prince or state, or of any colony, district, or people adjacent to the United States. There had been no use of armed vessels by the Patriots in these operations and none by the British other than their employment of the schooners in the *Barcelona* affair. The British Government however was alive to the situation and informed Sir John Colborne, in command of the military forces in the Canadas, that it thought it expedient to provide for a small fleet on the St. Lawrence and the Great Lakes, consisting chiefly of a few armed steamboats adapted to that navigation. It did not intend that any extensive preparations should be made for a naval force, but that only due precaution should be taken for securing the means of carrying on any necessary operations on those waters with the aid of small vessels to be procured in Canada. Captain Sandom, R.N., was ordered to Canada to take charge of these naval operations.<sup>32</sup> Accordingly *Traveller* and *Experiment* were acquired by the government, the former from John Hamilton for £9,000, after the season opened, and the latter from James Lockhart for £4,500, on 21 June.<sup>33</sup>

The troubles in Canada, coming as they did in the first year of the young Queen's reign, shocked the British people deeply. The rebellion had to be put down and peace restored to the provinces. Sir George Arthur,

<sup>32</sup> Albert B. Corey, *The Crisis of 1830-1842 in Canadian-American Relations* (New Haven: Yale University Press, 1941), p. 69.

<sup>33</sup> Augusta Grant Gilkison, *Early Ship Building at Niagara* (Niagara Historical Society, No. 18), p. 19.



formerly governor of the penal colony of Van Dieman's Land and successor to Lieutenant-Governor Head<sup>34</sup> reached Toronto in the early spring. Sterner measures were to be adopted.<sup>35</sup>

The failures of the Patriots' attacks brought down the vengeance of the Loyalists on their supporters in Canada. Thousands of them fled to the States where in a short time they were in desperate straits. To locate and aid them, the Canadian Refugee Association, a secret society, was formed on 19 March, at Lockport, New York. It did succor the refugees to a certain extent, but its main purpose was to further the cause of the Patriots in every way possible. This could be best done by creating incidents that would embroil the country in war with Great Britain. The most vulnerable section of the frontier was that along the St. Lawrence, where, among the Thousand Islands, a thousand refugees were reported to be hiding. Here raids across the river and among the islands became the business of the day. The leader of many of these activities was Bill Johnson,<sup>36</sup> the Patriot Admiral of the Lakes, and bitter enemy of the British and the Loyalist elements.

The extent of the society's plans are not known, but it had designs on the steamboats that plied Lake Ontario and the river, which were, with the exception of *Traveller* and *Experiment*, free of British naval craft. The first steamer to fall victim to its machinations was *Sir Robert Peel*. John B. Armstrong, her master, had spent the preceding winter in Watertown, New York, where the local Patriots suspected him of being a British spy. To even the score with him and at the same time retaliate for *Caroline*, the Association planned the destruction of his ship. It further hoped that the act would create the incident that would bring on war with Great Britain.

About 1:00 A.M. on the twenty-ninth of May, *Sir Robert Peel*, carry-

<sup>34</sup> Head left Toronto for England on 24 March 1838, via New York, dressed as a 'gentleman's gentleman.' He was recognized at the Mansion House in Watertown by the Patriots, but was treated courteously and allowed to proceed on his way.

<sup>35</sup> One of Arthur's first acts was to deny clemency to Samuel Lount and Peter Matthews, two of the leaders of the rebellion. Condemned by a Loyalist court, they were hanged in public view at Toronto on 12 April. Twenty-five others were shortly afterwards sent on their way to the place Arthur had come from—Van Dieman's Land.

<sup>36</sup> William Johnson or Johnston, referred to as the Pirate of the St. Lawrence by the British partisans, was born at Three Rivers, Canada, on 1 February 1782, and lived at Kingston from 1784 to 1812. At the outbreak of war in 1812, he, while a member of a militia company, was jailed for some military insubordination. He escaped and fled to the American side, and was an American spy during the war. On one occasion he robbed the British mail of important official dispatches, which he delivered to the American commanding officer at Sacketts Harbor. He was thoroughly familiar with the St. Lawrence border country. John Decater [sic], James and Napoleon assisted him in his enterprises. His beautiful daughter Kate, the 'Naïad of the St. Lawrence,' 'the Queen of the Thousand Isles,' was his intelligence section. Johnson did not look like a pirate at all, being a mild, intelligent-looking gent.

ing about 19 cabin passengers and 40 in the steerage, Armstrong in command, stopped at McDonnell's wharf on the south side of Wells Island, on her regular westward run to Oswego, to wood up. Threats of violence had been made against her. A cabin passenger had been given warning of an impending attack but had disregarded it. One Ripley, in charge of the wood at the wharf, told Armstrong that he had seen a long boat filled with men pass by two or three times that night and that on the first appearance of the steamer, he heard the remark: 'here she comes.' He suggested that he should not stay too long. Armstrong laughed and brushed the warning aside, saying he could take care of the Patriots as long as they did not come by hundreds. The steamer was kept under observation as she lay at the wharf by some men in a small boat out in the stream. At 3:00 A.M., she was boarded by a party of 22 men led by Commodore Johnson made up as Indians, and armed with pistols, muskets with bayonets fixed and pikes, crying: 'remember the *Caroline*.' The crew and the passengers so rudely roused from their slumbers, were quickly driven off the boat and on to the wharf. Little time was given to them to dress properly or gather their baggage. Some were in their night clothes, a few of them ladies, and the early morning was cold.<sup>37</sup> One of the victims was Major Frasher, half pay British officer and Customs House officer at Brockville. He had intimated earlier in strong terms, 'that should the damn Patriots attack the steamer they would receive a warm reception, etc.' He was so frightened when the boat was attacked, that in his haste to reach the wharf he could not find his pantaloons in the dark and appropriated a pair of red drawers belonging to a boy. Reaching the wharf he appeared among the passengers with his red drawers reaching only down to his knees, a ludicrous sight.<sup>38</sup>

The raiders went under such aliases as Tecumseh, Sir William Wallace, Judge Lynch, Captain Crockett, Nelson, Bolivar and Admiral Benbow. They systematically plundered the steamer. Toward morning they took her out into the stream and set her on fire. She burned down to the water's edge, turned over on one side and sank, one paddle-wheel remaining above the water in a horizontal position. The passengers and crew took refuge in the woodman's shanty and were picked up by *Oneida*, Captain Smith, which called at the wharf towards daybreak on her regular trip down the river. She put about and returned to Kingston with them. The passengers saved scarcely an article. A Mr. Holditch of Port Robertson

<sup>37</sup> Franklin B. Hough, *History of the Jefferson County in the State of New York* (Watertown, N. Y., 1854), pp. 521-523.

<sup>38</sup> Van Cleve, *op. cit.*, p. 63.

lost \$6,000.00, most of which was recovered later by the authorities. *Sir Robert Peel* was a total loss.<sup>39</sup>

The news raised great excitement and indignation throughout the Canadas but along the American side and throughout the States it was looked upon as retaliation for *Caroline*. The Canadian shores were put on the alert. Rumors were rife in Kingston that an attempt was to be made to destroy either *Oneida* or *Telegraph*. *Onedia* avoided trouble by passing Brockville, Loyalist center, on the evening of Friday, 1 June, without stopping, but *Telegraph* put in there about 10:00 P.M. that same night with a vessel in tow, on her way up the river. She rang her bell twice as she approached. On the wharf was a party of the Queen's militia along with several other people. Her stay was short and just after she left, she was hailed. Captain Childs stopped her and held her in the stream a short distance from the wharf. He answered that anybody that wished to come on board should put out in a small boat as he could not come back. Just then fifteen to twenty musket shots were fired at *Telegraph*, four of which hit her and one of which, an ounce bullet, barely missed the chambermaid standing near the stove in the ladies cabin. Childs dropped the tow and made off up stream under a full head of steam. The firing was stopped by the people on the wharf. The captain in command of the volunteer company on duty there went after *Telegraph* in Kingston, and on overtaking her explained to Captain Childs, when he learned that no harm had been done, that the men who had fired the shots—a sentry party—had misapprehended their orders, which were to fire two shots on the approach of any suspicious boat. Two of the men were later put under arrest. At Kingston, however, Colonel Bonnycastle in command of the Queen's troops, told Childs that he must expect to be fired into as long as the Americans acted as they did, and added by way of taunt, that the next outrage from our side would be the signal for him to cross the line in a hostile attitude—that the Canadas could take the state without aid from England.<sup>40</sup> All of which did little to allay the serious situation.

The Earl of Durham, who had been appointed Governor-General and Lord High Commissioner with full powers to investigate the grievances in the provinces and to report on a remedy, arrived at Quebec on 28 May. On being informed of the burning of *Sir Robert Peel* he authorized the offer of £1,000 for information leading to the conviction of any partici-

<sup>39</sup> Niles' *National Register*, LIV (9 June 1838), 226. J. Ross Robertson, *Robertson's Landmarks of Toronto. A Collection of Historical Sketches of the Old Town of York from 1792 until 1833, and of Toronto from 1834 to 1895* (Toronto, 1896), II, 870.

<sup>40</sup> Corey, op. cit., pp. 72-73. Niles' *National Register*, LIV (9 June 1838), 225.

pants. Governor Marcy of New York also posted a \$500.00 reward for Johnson, \$250.00 for lesser leaders and \$100.00 for any of the others. Johnson was roundly condemned and abused by the Canadian and American presses. To set them straight as to what had been done and why it had been done he issued his own proclamation.<sup>41</sup>

To all whom it may concern.

I, William Johnson, a natural born citizen of Upper Canada, certify that I hold a commission as commander-in-chief of the naval forces and flotilla. I commanded the expedition that captured the steamer *Sir Robert Peel*. The men under my command in that expedition were nearly all natural born English subjects—the exceptions were volunteers for the expedition. My headquarters was on an island in the St. Lawrence, without the jurisdiction of the United States, at a place named by me, Fort Wallace. I am well acquainted with the boundary line, and know which of the islands belong to the United States; and in the selection of the island I wish to be positive and not locate within the jurisdiction of the United States, and had reference to the decision of the commissioners under the 6th article of the Treaty of Ghent, done at Utica, in the state of New York, 13th June, 1822. I know the number of the island, and by that decision it was British territory. I yet hold possession of that station, and we also occupy a station some twenty or more miles from the boundary line of the United States, in what was his majesty's dominions until it was occupied by us. I act under orders. The object of my movement is the independence of the Canadas. I am not at war with the commerce or property of the citizens of the United States.

Signed this tenth day of June, in the year of our Lord  
one thousand eight hundred and thirty eight.

WILLIAM JOHNSON.

Several arrests were made all charged with having taken part in the affair. One, a William Anderson, was indicted for arson on six counts and tried in the circuit court and acquitted. With the people feeling as they did it was impossible to convict a Patriot of any such offense. Bill Johnson continued to raid, burn and loot on the Canadian side of the river for some weeks. The Thousand Islands were searched by both American and British military authorities. His retreat on Abel's Island was discovered on 4 July. In the attempt to arrest the gang, all but two of the eight men found in it escaped, he among them.<sup>42</sup>

Both incidents caused much alarm and uneasiness in Lake Ontario shipping. The steamboat *United States* was warned at Rochester, Oswego and Sacketts Harbor not to stop at Kingston. Owners demanded armed guards for their boats. To secure Canadian shipping from further at-

<sup>41</sup> *Niles' National Register*, LIV (28 July 1838), 349.

<sup>42</sup> The two captives were taken to Sacketts Harbor in *Telegraph*, along with Johnson's twelve-oared boat. It was clinker-built, with a black bottom, and painted red and yellow both inside and out.



tacks, Durham approved Colborne's recommendation of 8 June that Captain Sandom be authorized to fit out a small armed vessel to cruise among the Thousand Islands and hire additional steamers if he should need them for the river and Lake Ontario. He also requested Vice Admiral Sir Charles Paget, commander of the fleet at Quebec, to permit officers and men to volunteer for service under him. *Experiment*, already purchased, was armed for service on the river. Four days later the Federal Government informed the British Minister at Washington that it intended to use on Lakes Erie and Ontario two unarmed steamers commanded by naval officers and carrying fifty soldiers each.<sup>48</sup>

At this time there were flare-ups of Patriot activity on the Niagara and Detroit fronts. That along the Niagara, sponsored also by the Canadian Refugee Association, consisted of a raid into the Short Hills district by a small party which crossed the River from Grand Island on the steamer *Red Jacket*. It was dispersed and rounded up by British and Canadian troops. Thirty-two prisoners were captured and taken in *Experiment* to Toronto for trial. That along the Detroit front was the work of another secret society, the Sons of Liberty, recently organized. Upper Canada was to be invaded on 4 July. Windsor was to be taken and an advance east made in connection with a general rising. The lack of arms was to be supplied by robbing the United States Arsenal at Dearborn. Nothing happened as a Patriot named Baker upset the plans by going off on a looting expedition to the Black River in a small sloop.

On 28 June, the party crossed the St. Clair River near Newport, 40 miles from Detroit, and robbed some country stores. They beat off an attack by some Canadian militiamen and Indians and held their ground. The British authorities sent reinforcements forward in *Thames*. The Collector of the Port of Detroit heard of the expedition and started for the scene of action with a small force in *General Gratiot*. On sighting the *Gratiot*, the raiders ran their sloop aground. Brisk firing broke out from the Canadian shore and they abandoned her and took to the woods. Two or three cannon were found in her hold along with fifteen barrels of flour and a few Canadian prisoners. One of the gang was captured then and five others were picked up later by Governor Marcy. The raid was an indication of trouble to come for General Brady, who took extra precautions to guard the arsenal. As the Patriots could get no arms, there was no invasion.

After the *Sir Robert Peel* and *Telegraph* incidents, the frontier quieted

<sup>48</sup> Corey, op. cit., pp. 108-109. James Morton Callahan, *The Neutrality of the American Lakes and Anglo-American Relations* (Baltimore, 1898), pp. 97-98.

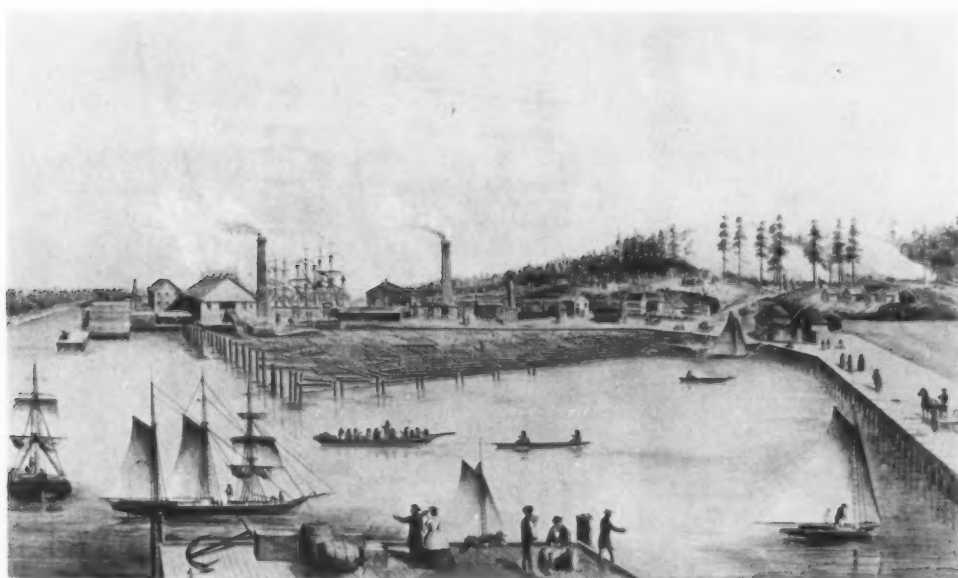
down somewhat, but the situation remained grave. At this time there were about 3,000 British regulars in Upper Canada scattered in detachments from Kingston to Sandwich opposite Detroit. Additional troops on the way and a line of barracks and posts along the line was being planned.<sup>44</sup> On the American side, Major General Alexander Macomb and all available regulars were ordered to the frontier. On 5 July Congress voted an increase of 6,650 men for the regular army. In the course of the next few months, Macomb had 2,000 men under his command and raiding across the lakes became more and more difficult. The situation appeared to be under control.

<sup>44</sup> Corey, *op. cit.*, p. 104.



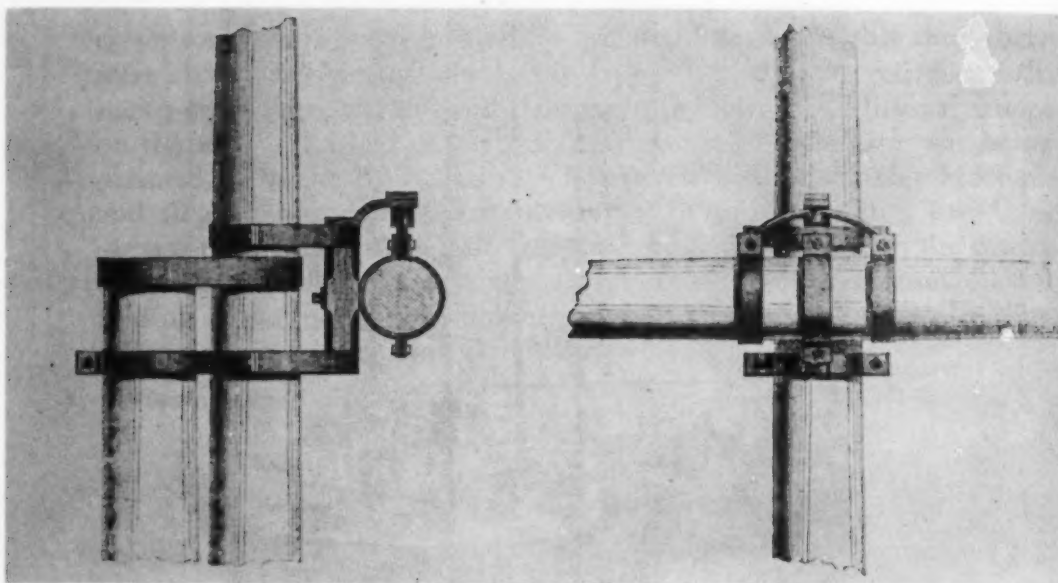
Barkentine *Lamplighter* at Beaufort, South Carolina

*Reproduced from a stereoscopic view, probably taken in 1865, in the  
New York Historical Society, New York City*

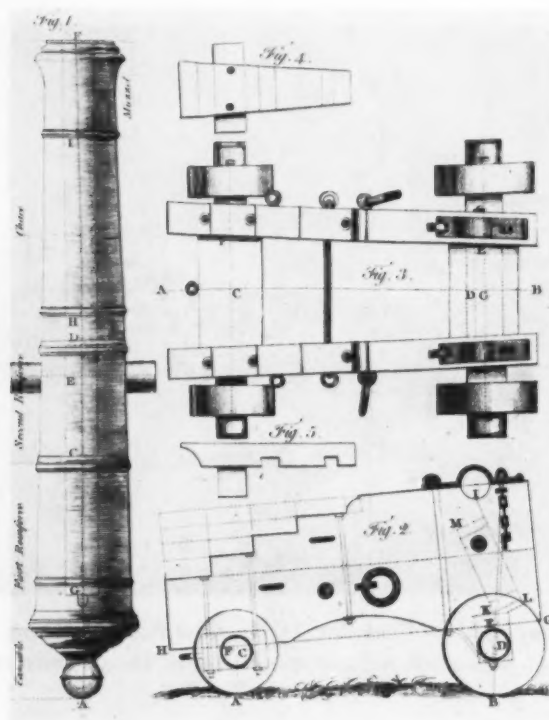


Barkentine *Jenny Ford* at Teekalet, W.T., now Port Madison, Washington

*Reproduced from a lithograph of 1861 or 1862 in The Mariners' Museum,  
Newport News, Virginia*



C. and R. Poillon's method of attaching lower topsail yards, 1855  
*Reproduced from Monthly Nautical Magazine and Quarterly Review, II (1855), 340*



Gun Carriage

*Reproduced from John Robertson, Treatise of Such Mathematical Instruments as are usually put into a Portable Case . . . and The Description of Ship-Guns and Sea Mortars . . . (London, 1775)*



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# Notes

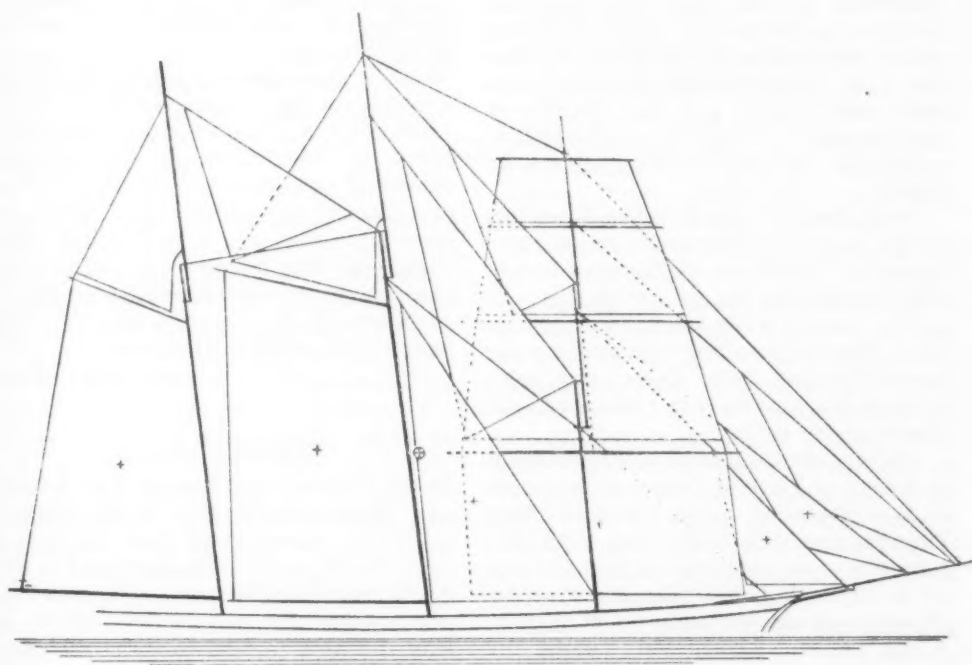
## EARLY BARKENTINE ILLUSTRATIONS

THE three earliest representations of the barkentine rig on sailing vessels that I have been able to find are shown in the accompanying figure and on Plate 39. The sail plan is from Griffiths' *Ship-builder's Manual and Nautical Referee* (New York, 1853), II, plate 8, opposite page 86, and represents the 'bark *Mary Stockton* . . . or, as some would denominate her, a three-masted schooner,' built at Manitowoc, Wisconsin, by Bates & Son, in 1853. She measured 340 tons and carried only 297 tons of deadweight, being of a very sharp model.

Griffiths, with Bates, also edited the

*United States Nautical Magazine and Naval Journal* (which sold for \$5 an issue), and it is interesting to note that the word *barkentine* had not entered his vocabulary as late as 1857, in giving the lines and spar dimensions of *De Soto* (V, 408), built at Cleveland, Ohio, in 1856.

The second example is at the bottom of Plate 39, from a lithograph by Troutman Grob, published by Nagel, Fishbourne & Kuchel, San Francisco, and showing the Pope & Talbot mill at Teekalet, W.T. (now Port Madison, Washington). I am indebted to Mr. Harold S. Sniffen of The Mariners' Museum for information that enables the date to be established as 1861 or 1862. The barkentine shown is almost certainly *Jenny Ford*, built at East Machias, Maine, in 1854 by William E. Cummings. She measured 133'4" x 30'3" x 10'10" and registered 397 tons. Her first ownership was A. J.



Barkentine *Mary Stockton*

Pope 1/3, W. C. Talbot 1/3, and J. P. Kellar 1/3, all of San Francisco; while in 1861 it was sworn to by A. J. Pope, San Francisco, agent, and was distributed among G. W. Pope, Boston, 1/2; F. Talbot, New York City, 1/6; Charles Foster, East Machias, 1/6; and J. P. Kellar, Teekalet, 1/6.

*Jenny Ford* arrived at San Francisco, 141 days from Boston with a general cargo, on 3 June 1855. Her owners evidently felt that a brand-new vessel could do more than carry lumber, so they advertised her as a 'new, clipper three-mast schooner' and put her on the berth for Australia. The following description was reprinted in the San Francisco *Alta* from the Sydney *Shipping Gazette*, 2 November 1855:

'Sydney, August 27. A splendid three masted schooner named the *Jenny Ford* arrived from San Francisco on the 20th inst. after an excellent passage of 51 days. She is a remarkable vessel and her rig is entirely different to that usually adopted; she is square rigged on the foremast with double topsail yards and carries no less than eight staysails, all of which were set as she came up the harbor. Capt. Sargent states that she makes with ease 14 knots per hour; her carrying capacity is very great in addition to which she has ample cabin accommodations.'

*Jenny Ford* returned to San Francisco with a cargo of coal from Newcastle, and thereafter sailed out of Teekalet to San Francisco or the Hawaiian Islands.

The vessel shown stern on, astern of *Jenny Ford*, is possibly intended for the hermaphrodite brig *Koloa*, 199 tons, built at Machias in 1853 and sent to the Pacific about 1858.

The third example of a barkentine is at the top of Plate 39, from a stereoscopic view of Beaufort, South Carolina. Miss Dorothy C. Barck, of the New York Historical Society, informs me that the vessel is the bark *Lamplighter* and that the photograph was probably taken in 1865. There are two *Lamplighters* among the barks in *American Lloyds Register* (1862),

but the deck arrangement of ours identifies her as built in Calais, Maine, in 1854, registering 279 tons on dimensions 113' x 28' x 9'7".

JOHN LYMAN

#### CORRECTION CONCERNING *Guerriere's* GUNS

In the July 1947 issue there appeared the reproduction of a drawing of the guns of the U. S. frigate *Constitution* and those of a vessel named *Guerriere*. The note which I submitted to accompany the drawing identified *Guerriere* as His Britannic Majesty's frigate of that name. One of NEPTUNE's readers, Mr. H. C. Palmer, in a letter to me expressed doubt that the *Guerriere* guns were those of the British vessel and the belief that they were probably those of the U. S. frigate *Guerriere*. I find Mr. Palmer to be correct in both.

The log of the frigate *Constitution* for 20 August 1812 reads in part:

... his Britannick Majesty's Ship *Guerriere* mounting 49 carriage guns, 30 of which were 18 pounders, on his main deck, 14 32 pound carronades on his quarter deck and one howitzer, a 12 pound calibre also, and 2 32 pound carronades, and 2 twelve pounder long guns on his fore-castle.

None of these guns appear in the drawing. On the other hand, the U. S. frigate *Guerriere*, according to documents in the Office of Naval Records and Library, mounted 53 guns: 33 long 24's and 20 carronades, 42 pounders, exactly the guns depicted in the drawing. My thanks to Mr. Palmer for calling the error to my attention and my apologies to NEPTUNE for perpetrating this fine example of wishful thinking.

M. V. BREWINGTON

#### QUARTER WAGENER

In the January 1946 issue of THE AMERICAN NEPTUNE Charles E. Goodspeed called the attention of the readers to a copy of a 'Quarter Wagener' and in the April number Thomas A. Stevens supplied valuable information about at least two of its owners. Still, for the word itself no satisfactory explanation was

given. That Quarter Wagener has anything to do with quarterdeck does not seem probable, for all charts and atlases were in use on the quarterdeck. That the use of the word 'quarter' arose from the fact that the original issues of Waghe-naer's charts were made up of four parts, 'answering to the four quarters of the globe,' is certainly not correct, for the first edition was only in one part and the later issues in two (part I the west coast of Europe, part II the Baltic and the Norwegian coast).

However the writer, who gave this explanation as a possible one, scented the right track. Van Keulen's atlas, compiled by his chartmaker Claes Jansz. Vooght, was published in five volumes, to which a sixth volume was added in 1753 with charts for navigation to the East Indies. The volume dealing with the Caribbean Sea is volume IV and accordingly bears at the head of the title page the words 't Vierde Deel.' In this case they only mean 'volume IV,' but the literal translation is 'quarter,' and it is easily understood that an American owner, unfamiliar with the pinches of the Dutch language, used 'quarter Wagener' as translation for the Dutch title.

W. VOORBEIJTEL CANNENBURG

#### RIVER-BUILT OCEAN-GOING VESSELS

A STUDY of the W.P.A. *Ship Registers and Enrollments of New Orleans* indicates that there was a good deal more building of seagoing vessels on the Mississippi and Ohio Rivers than is generally realized. The subject is mentioned in Hutchins, *American Maritime Industries* (Cambridge, 1941), 193, and in Hulbert, *The Ohio River* (New York, 1906), 241 ff; according to the latter, twenty were built during the period 1800-1808, but the New Orleans registers, which only commence in 1804, indicate an even more extensive industry.

The earliest such craft recorded are the schooner *Monongahela Farmer*, 250 tons, built at Elizabeth, Pennsylvania, and the brig *St. Clair*, 110 tons, built at

Marietta, Ohio, both in 1800. The *Monongahela Farmer* was rigged as a ship on arriving at New Orleans. Other Marietta-built vessels of the period were *Muskingum*, *Eliza Greene*, *Indiana*, *Marietta*, and *Mary Avery*, followed by the ship *Temperance*, 1804; ships *John Atkinson*, *Rufus King*, and *Tuscarora*, 1806; ships *Frances* and *Robert Hale*, 1807; and brigs *Hope*, *General Putnam*, and *Poelet* (rerigged as a ship), 1808.

Pittsburgh produced the ship *Pittsburgh*, 1801; schooner *Amity* and brig *Nanina*, 1802; schooners *Alleghany* and *Conquest*, and ships *General Butler* and *Louisiana*, 1804; schooner *Betsey*, brig *Black Walnut*, and ship *Western Trader*, 1805; brig *Exchange*, 1806; and brig *Joseph and Ruth*, 1810. Eddyville, Kentucky, built the schooner *Clarissa Clai-borne* and brig *Melinda*, 1807, and schooner *Beulah*, 1811; while Louisville added the brig *Kentucky*, 1805, and ship *General Scott*, 1806.

Others were the brig *Recovery*, at Charleston, [West] Virginia, 1805; brig *Mildred*, Gallatin County, Kentucky, and ship *Thomas Penrose*, Maysville, Kentucky, 1806; ship *Orlando*, Gallia County, Ohio, and schooner *Ohio*, Ohio County, [West] Virginia, 1810; ship *Three Sisters*, Nile, Ohio, 1811; schooners *Economy*, Belprie, Ohio, and *Mary*, Allegheny County, Pennsylvania, 1812; and brig *Cincinnatus*, Columbia, Ohio, 1817.

I have taken a registered tonnage of 100 or over as the criterion of a 'seagoing' vessel; but there were also a score of smaller schooners listed as having come down the river to New Orleans in this period. Some of these seem to have traded as far west as Mexico and as far east as Florida. Included among them were some three-masters: *Hope*, built at Marietta in 1808; *Little Dromo*, at Wheeling, [West] Virginia, 1800; and *Orleans Packet*, Pittsburgh, 1804. *Three Sisters*, 403 tons, seems to have been the largest hull of the period.

After *Cincinnatus*, there was a hiatus until nearly the Mexican War period. Then we find the schooner *Louise Antoi-*

nette, New Albany, Indiana, 1844; bark *Muskingom*, Marietta, 1845; bark *John Farnum* at Marietta and brig *M. P. Casselly* at Cincinnati, Ohio, 1847; bark *Matilda*, St. Louis, Missouri, and ship *Minnesota*, Cincinnati, 1848; brig *Louisa* and bark *John Swasey*, Cincinnati, 1850; and barks *Salem*, 1851, and *Buckeye*, 1852, at Covington, Kentucky. *Minnesota*, 799 tons, was the largest of this group by far.

As before, some smaller craft are listed, including the three-masted schooner *Tyrant*, built at New Albany, Indiana, in 1845, although she possibly was intended for a steamboat hull.

The bark *Mary Belle Roberts*, 369 tons, built at Little Hocking, Ohio, in 1864, completes my list of river-built ocean-going sailing vessels. She was later the Hawaiian *Kalakaua*.

JOHN LYMAN

#### SURGERY AND SHIPBUILDING

Dr. Fred H. Albee, famous New York bone surgeon, was brought up in the little town of Head Tide, Maine, on the Androscoggin River. In college vacations he worked in the wooden shipyards which were then so common along the coast, and there learned the principle of the dowel, the mortise and tenon, and the treenail, used in fastening the timbers together. In later years it was these principles, applied to bone surgery, which made him world famous. One of his best known operations involved 'squaring out' the hip socket. His idea for this, he stated, came from the method of setting a mast.

PHILIP H. COOK

#### 'FLYING CLOUD' VERSUS 'ANDREW JACKSON'

In *Greyhounds of the Sea* the abstract log of *Andrew Jackson* on her 1859-1860 passage from New York to San Francisco is quoted at length, and is accepted as proving that the *Jackson's* time was 89 days 4 hours from dropping the pilot at New York to being in a position to pick one up at San Francisco. However, there was no pilot available on the afternoon of 23 March 1860, and the ship had to come in the next morning, to anchor 90 days 12 hours from her anchorage at New York. The time of 89 days 4 hours is nevertheless considered by Mr. Cutler to be superior to that of *Flying Cloud* (89 days 8 hours in 1854), although he does suggest that more information may come to light (p. 45).

A copy of the 1854 log of *Flying Cloud* exists in the National Archives, as mentioned in *THE AMERICAN NEPTUNE*, I (1941), 158. It shows that she got underway at 12 noon, 22 January 1854 and dropped her pilot at 3:30 P.M. the same day. At 1 P.M. of 21 April she made the Farallones, at 6 P.M. took a pilot, and presumably at 8 P.M. she anchored (the logbook merely says 'anchored after a passage of 89 days 8 hours'). Both dates here are sea dates; the civil dates are 21 January and 20 April, respectively. Her pilot to pilot time therefore was 89 days 2½ hours, and her time from dropping the New York pilot to sighting the Farallones (which took *Andrew Jackson* 89 days 4 hours) was 88 days 21½ hours.

*Flying Cloud* thus clearly holds the New York-San Francisco sailing record.

JOHN LYMAN



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76. GUN CARRIAGES. Mr. Frank Taylor's answer to this query in the April 1947 issue has brought to light such a valuable and yet obscure piece of source material on eighteenth-century naval guns that the Editors have decided to reprint it and to reproduce an illustration on Plate 40. It is printed as an appendix to the third edition of John Robertson's *Treatise of Such Mathematical Instruments as are usually put into a Portable Case . . . and The Description of Ship-Guns and Sea Mortars . . .*, London, 1775. The data were not included in either the first or second editions of the book. In using the tables for the construction of models, one should keep in mind that the proportions would not cover exactly every gun or carriage of English manufacture due to the empirical method used by Robertson in compiling the work: the guns and carriages represent a theoretical ideal rather than actual practice.

79. ACME. The four-mast bark *Star of Poland* was built at Bath, Maine, for the Standard Oil Company as *Acme*. Aside from references to her in Hennessy's *Sewall Ships of Steel* and a few words in Lubbock's *Downeasters*, I have had difficulty in locating other sources of information concerning her first dozen years as a Standard Oil vessel. Can any reader supply additional data?

HAROLD D. HUYCKE

80. MEDIEVAL SHIPS. I am beginning to assemble data in preparation for building a model of a ship of the period 1200-1400. The material available on north European marine architecture for the thirteenth and fourteenth centuries is pretty meagre. I have Nance's and Culver's books of models and types, Romola and R. C. Anderson's *The Sailing Ship* and Chatterton's *Ships and Ways*. I would

TABLE of the British Establishment of the weights of Shot; and the lengths of Cannon and their chief parts; with their reduction to calibres of the shot.

Weight of the Shot, in pounds.	Calibre of the Shot, in inches.	Length of the Gun, in inches.	Length of the Gun, in calibres.	Length of the 1st Reinforce, in calibres.	Length of the 2nd Reinforce, in calibres.	Length of the Chace, in calibres.	Length from the breach to the cent. of Trun.
4 lb	3.0526	72	23.587	6.739	4.369	12.478	10.108
6	3.4944	84	24.039	6.868	4.434	12.736	10.302
9	4.0000	84	21.000	6.000	4.000	11.000	9.000
12	4.4026	108	24.531	7.009	4.504	13.018	10.513
18	5.0397	108	21.430	6.123	4.061	11.246	9.184
24	5.5469	108	19.470	5.563	3.781	10.126	8.343
32	6.1051	114	18.673	5.335	3.668	9.670	8.002
42	6.6844	120	17.953	5.129	3.565	9.259	7.693

A TABLE shewing the dimensions of the several parts of an Iron 24 pounder, whose length was 9 feet.

Great Parts	Lesser Parts	Members	Length on axis	Diameters
Cascable Length 2.217	Button	{ Sphere	0.595	1.280
		{ Fillet	0.054	1.334
		{ Zone	0.406	
		{ Neck	0.370	1.100
		{ Fillet	0.054	1.568
	Breech rings 0.792	{ Ovolo	0.126	1.929
		{ Fillet	0.054	2.109
		{ Cima	0.378	
		{ Fillet	0.054	3.299
		{ Ovolo	0.126	3.569
Diam. { 3.425 3.209 1st reinforce Length 5.562	Base rings 0.612	{ Fillet	0.054	3.641
		{ Band	0.216	3.695
		{ Fillet	0.054	3.641
		{ Ogee	0.288	{ 3.605 3.461
		{ Ventage	0.847	
	Astragal	{ Fillet	0.054	
		{ Astragal	0.126	
		{ Fillet	0.054	
		{ Clear or Zone	3.563	
		{ Fillet	0.054	3.245
Diam. { 3.065 2.902 2nd Reinforce Length 3.896	Trunnion Rings	{ Band	0.198	3.299
		{ Fillet	0.054	3.245
		{ Ogee	0.180	{ 3.173 3.101
		{ Clear or Zone		
		{ Trunnions	1.054	
		{ Clear or Zone	0.234	
		{ Fillet	0.054	2.938
		{ Band	0.198	2.992
		{ Fillet	0.054	2.938
Diam. { 2.776 2.253 Length Chace 10.1071	Chace Girdle Length	{ Ogee	0.180	{ 2.884 2.812
		{ Girdle	0.847	
		{ Fillet	0.054	
		{ Astragal	0.126	
		{ Fillet	0.054	
	Cornice Rings 0.234	{ Clear or Zone	5.656	
		{ Fillet	0.054	
		{ Astragal	0.126	
		{ Fillet	0.054	
		{ Collar	2.380	
	Muzzle Rings Length 0.540	{ Ovolo	0.198	3.010
		{ Fillet	0.054	2.812
		{ Ogee	0.234	{ 2.722 2.397
		{ Fillet	0.054	
		{ Fillet	0.054	2.289

TABLE of general Dimensions of the Parts of a Ship Gun Carriage, in Calibres of the respective Shot.

Of the Brackets.

Length - - - - -	Calib. 12.522	Thickness - - - - -	Calib. 1,000
Breadth, before - - - -	4,686	Breadth behind - - - -	2,343
Distance, at the Trunnions	2,992	Distance at mid. of hind Axtree	3,695
Distance of the center of the trunnion hole from the front - - - -			1,983
Diameter of trunnion hole	1,082.	Center sunk in the side - - - -	0,045
Radius of the Ovolo next the upper step - - - -			0,500
Excavation in the bottom { length of its chord - - - -			5,000
{ dist. from the front - - - -			3,500

The Axtrees.

Whole length - - - -	9,735.	The Arms { length - - - -	1,767
		{ diameter - - - -	1,118
Breadth, between the brackets, at the { fore - - - -			1,226
		{ hind - - - -	2,163
Breadth, between the Brackets and Arms - - - -			1,226
Depth in the mid. of fore	1,659	Depth in mid. of hind - - - -	1,226
Distance between the middles of the Axtrees - - - -			8,684
Dist. of middles from the brackets ends, { fore - - - -			1,622
		{ hind - - - -	2,215
Depths of Axtrees let into the brackets - - - -			0,432
7 rucks, their thickness	1,000;	their diameter { fore - - - -	3,245
		{ hind - - - -	2,884

Cap-square	Calib.	Breeching ring, diam. { inner - - - -	0,800
Whole length 2,974. Breadth	0,721	{ outer - - - -	1,300
Thickness - 0.125. Bend	1,082		
Fore flat - 1,171. Hind flat	0,721	Stool-bed.	
Head of Joint bolt { length - - - -	0,431	Whole length 5,822. Thickness	0,721
{ breadth - - - -	0,216	Breadth before 1.082. Behind	1,803
Head of Eye bolt { length - - - -	0,415	Bolster, length 2,974. Breadth	1,000
{ breadth - - - -	0,216	Depth - - - 1,250. let in - - - -	0,090
Rounding at ends of Cap-square	0,216	Fore Notch { breadth - - - -	0,342
Joint bolt projects out of Cap sq.	0,207	{ depth - - - -	0,234
Thickness of the key - - - -	0,054	{ dist. from front - - - -	0,613
Bolts, their diameter - - - -	0,270	The Transom { length - - - -	3,000
Diam. of Burrs, and heads - - - -	0,360	{ thickness - - - -	1,000
Diam. of Burr ring - - - -	0,486		
Loops { inner diam. - - - -	0,300		
{ outer diam. - - - -	0,721		

appreciate tips from AMERICAN NEPTUNE readers on other sources of information on that period.

GEORGE M. CUNHA

81. MR. HARDY LEE. Could NEPTUNE readers supply the identity of a lithographer known to me only as 'Chinks'? His book, *Mr. Hardy Lee, His Yacht, Being XXIV sketches on Stone*, by Chinks, was

published in Boston by A. Williams and Co., 100 Washington Street, 1857, and is, I believe, one of the earliest exclusively on American yachting. Mr. Hardy Lee [a dreadful pun!] is owner of the schooner *Winds Eye*, and pictorially we follow his adventures from ordering her built, through a successful yachting season in Boston waters, to courtship and mar-

riage to one of his young lady guests, who, on examining the compass, stated that she did not see 'how that little card makes the rudder turn!'

ALEXANDER CROSBY BROWN

82. GUN SHOT. In early United States naval actions there is frequent reference to 'gun shot,' 'musket shot' and 'pistol shot' (and 'half pistol shot'), referring in each case to a commonly understood distance, or unit of length. (For instance: *Journal of U. S. frigate Constitution*, 4 August 1804—attack in harbor of Tripoli. Office of Naval Records and Library, *Naval Documents related to the United States Wars with the Barbary Powers*, IV, 336.)

W. H. Smyth, *The Sailor's Word Book* (London, 1867) defines 'gun shot' as a range of about 800 yards. This is the only specific reference I have found, and is of course too recent to be trusted. Can any reader guide me to a contemporary statement of the distances generally understood by the above terms?

EUGENE S. FERGUSON

83. MONKEY SAIL. What is the monkey sail of a bark? (*U. S. Nautical Magazine and Naval Journal*, V (1857), 387: 'Lucy Ann . . . lost main and monkey sails'; p. 388: 'Union . . . lost boat, bulwarks, and monkey sail, split sails, etc.')

JOHN LYMAN

37. POILLON'S RIG. In 1943 I inquired whether this term, which was used in Atlantic Mutual Insurance Company inspection comments, published by Pro-

fessor R. G. Albion in *THE AMERICAN NEPTUNE*, I (1941), 47, referred to a marine railway operated by the Poillons or to some improvement in the rigging of sailing vessels invented by them. I am now able to answer my own query by quoting a letter from C. and R. Poillon, published in *Monthly Nautical Magazine and Quarterly Review*, II (1855), 339. The accompanying drawings are reproduced in collotype on Plate 40.

New-York, June 18, 1855

Messrs. Griffiths & Bates:

Gentlemen:—We send you drawings of a new method of attaching lower Topsail Yards for vessels that use double topsails, which possesses many advantages over the different modes now in use, viz:—

Requiring much less weight of iron work.

Being hung on the topmast and lower-mast-head, taking the entire strain off the caps.

The lower band extending to the lower-mast-head forms an extra cap, besides giving additional security to the mast-head.

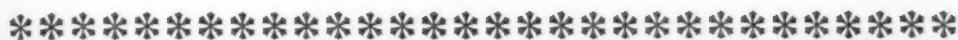
The beautiful clipper ship *Andrew Jackson*, of 1700 tons, now on the berth for San Francisco, has adopted this plan, the iron work for which has been made in a very superior manner by Mr. Sutherland, of Maidenlane. The weight of one truss for this ship is equal to 715 pounds.

Respectfully,

C. & R. POILLON

JOHN LYMAN





## Book Reviews

JAMES DUNCAN PHILLIPS, *Salem and the Indies—The Story of the Great Commercial Era of the City* (Boston: Houghton Mifflin Company, 1947). 5¼" x 8¼", cloth. xx + 468 pages, 31 illustrations. \$6.00.

Readers of THE AMERICAN NEPTUNE, who have followed Mr. Phillips' articles in the past seven years, will welcome the publication of the volume of his history of Salem that covers the period of great maritime expansion. This is particularly true because there have been so few attempts to present a general picture of Salem commerce. Immense quantities of facts have been assembled and published in the past—particularly in the eighty-three volumes of *Historical Collections*, issued quarterly by the Essex Institute since 1859—but until Mr. Phillips published his *Salem in the Seventeenth Century* in 1933 no one had really attempted to digest them. A second volume, *Salem in the Eighteenth Century*, appeared in 1937, bringing the history of the place down to the close of the Revolution. *Salem and the Indies*, the third of the series, covers the period from 1783 to the end of the War of 1812; that is, the great commercial era when Salem vessels extended the frontiers of American trade to the most distant ports of Europe and Asia.

Mr. Phillips has not contented himself with the vast amount of published material upon the history of Salem, but has gone to the shipping manuscripts of the Essex Institute, to the Salem custom house records and to contemporary newspapers. From these sources he has brought to light little-known facts, which are woven together into a lively narrative that gives the best available picture of the greatest days of the port. Here is the story of voyages to the Baltic, to India, China and the Netherlands East Indies, and of the men and ships that made these voyages possible, written with an enthusiasm and conviction that is reminiscent of the period described. Here too is a convincing picture of the town and the habits of its people; how they worked and how they amused themselves.

The late Poet Laureate, Robert Bridges, in the preface to his anthology *The Spirit of Man*, observed that 'the reader is invited to bathe rather than to fish in these waters'. Similarly *Salem and the Indies* is not a book of reference to which the reader will go for lists of ships and statistical tables; it is rather the narrative account of the accomplishments of a single generation of New England shipmasters and merchants, which should be read as a whole. For this purpose it cannot be too highly recommended.

*A Century of Ship Agency and Brokerage: The Story of Funch, Edye & Co., Inc. 1847-1947* (New York: Funch, Edye & Co., 1947). 6" x 9", cloth. 30 pages, portraits and facsimiles, 'written, designed and produced' by Business Biographies, New York.

Although maritime historians have turned their attentions to the details of ship-building and navigation, literature covering the management and operation of ships from a business standpoint is regrettably meagre. It will come as a surprise to

many to discover that this venerable firm of ship brokers once owned and operated the McKay clipper *Sovereign of the Seas*. This little book does not have room to detail the intricacies of ship management, but it is agreeable to learn that the company's operations for the past century have in no small part contributed to the pre-eminence of America's foremost port.

ANNO TEENSTRA, *De Clippers; Een Nieuwe Geschiedenis van der Snelste Nederlandsche Zeilschepen uit de Tweede Helft der 19e Eeuw* (Amsterdam: Holdert & Co. N. V., 2d printing, 1946), 6" x 8½". xx + 283 pages, 46 illustrations. 15 guilders.

Thanks to Clark, Matthews, Lubbock and Cutler, American readers are familiar with the exploits of American and British clippers in the California, Australian and China trades, but it is only within the last few years that Dutch writers have begun to set down the story of their ships in the run between Holland and the East Indies. *De Clippers*, already in its second printing since 1945, lists some 143 vessels as clippers, but since the last of these were built in the 1890's, one may guess that the author's criterion of a clipper is not severe.

Some of these came from America, the most notable being *Electra*, formerly *Witch of the Wave*, and *Noord-Brabant* (the Kennebunk-built *Armada* of 1859), which from 1871 to 1881 was the largest ship of the Netherlands merchant marine. The first Dutch-built clipper was the bark *Magdalena* of 1850.

The book has a bibliography and a full index. There are the usual logbook extracts in an appendix, and among the illustrations are a couple of sail and rigging plans.

A. C. METZELAAR, *Europa Ahoy! De Geschiedenis van een Zeilschip*; with a foreword by Jhr. Mr. A. F. de Savornin Lohman (Amsterdam: Holdert & Co. N. V., 1941). 6" x 9". 260 pages, 32 illustrations, half linen. 5.90 guilders.

*Europa* was a steel full-rigged ship of 1991 tons, built in Amsterdam in 1898, and the author joined her as an apprentice at Rotterdam in 1906, sailing to Fredrikshald, Melbourne, Newcastle, Caleta Buena, Melbourne again, Port Pirie and Dunkirk. *Europa Ahoy!* is an account of that voyage, put together from letters home, a diary, and recollections.

The book has gone through ten printings in Holland since 1941. Written in a simple, straightforward style, with a boy's eager attention to small details, it deserves a place in any bookshelf alongside Dana's *Two Years* and Pryce Mitchell's *Deep Water*. The excellent illustrations include lines and sail plan of *Europa*, a surprisingly sharp vessel for her day.

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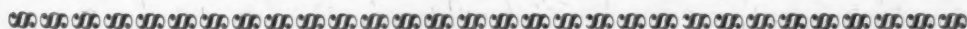
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